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MIND

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OF

PSYCHOLOGY AND PHILOSOPHY

I.—WHY THE BODY HAS A MIND AND THE SURVIVAL OF CONSCIOUSNESS AFTER DEATH.[1]

BY MORTON PRINCE.

I.

I AM going to put aside the temptation to set out with the customary historical exposition of the various theories of the mind and its relation to the body that have been held by philosophers and scientists of all times. However interesting such historical resumés of thought and knowledge may be, they get us nowhere. I am going to approach the question entirely from the standpoint of present-day science. What we are all interested in, what you are interested in, is the question: Does modern science, do the amazing discoveries of science that have been revealed in recent years, of physics and chemistry, and psychology and neurology, and indeed of palæontology and anthropology, throw any further light, more than we have always had, on this baffling, intriguing problem, all-important for human satisfaction?

Many of us, fortunately not all, doubting souls that we be, yet earnestly longing for spiritual acquiescence in our brief mundane life, insistently ask for an answer to this question. You all remember the often quoted remark of Carlyle when told that Margaret Fuller "accepted the universe". "Gad, she had better," exclaimed Carlyle. Yet seething, restless human nature, unsatisfied with blind faith and impelled by a constant urge to know, asks again and again of science what assurance it can give that personal existence may not be

[1] A lay sermon delivered under the auspices of the Phillips Brooks House Association (Harvard University), November 22nd, 1925.

merely an ephemeral phase of a small portion of the Universe. This desire for assurance, often involving the assuaging of poignant sorrow, finds expression in modern spiritualism and gives an explanation of the blind faith of many noble minds, often keen intellects, in the tawdry phenomena of the spiritualistic séance, or, at best, in unscientific and logically inadequate evidence of surviving spirits, evidence that would be given scant hearing in any other domain of intelligent inquiry. So if modern science can contribute anything of a positive character that will enable us to have anything like a real understanding of the nature of the mind and its relation to the body, it may be able, or at least it ought to be able, to have something to say in respect to the possibility of the mind surviving the body after death.

It is not superfluous, I think, to point out, in passing, that whatever theories have been held in respect to these problems, whatever speculations have been indulged in by philosophers and scientists from Aristotle to Descartes and, in recent times, Spencer and George H. Lewes, and Huxley, and Clifford, and others, they have all been based upon the actual scientific knowledge of their day. They may very properly be regarded as the logical interpretation of the facts laboriously and slowly achieved by contemporary science, but considered from differing points of view. But it was contemporary science; let us not forget that. As new facts are accumulated old facts take on new meanings, and new interpretations are called for. The older theories held only for their day; or rather the evaluation of those theories, for they were derived from the relatively simple contemporary scientific knowledge, which only justified their being assigned to a place in the category of speculation.

This knowledge, for all its positiveness and self-satisfaction, was relatively meagre; and, riddled with gaps of the unknown, it terminated in blank walls beyond which there were only hypotheses and speculations. And such, we must admit, it is to-day, however relatively advanced.

Moreover, after passing in review the various theories that have been offered, it becomes obvious that what changes have taken place in thought have been rather in the reappraisal of old theories than in the conception of new ones. For science has no new data from which to advance a theory of mind that has not already been suggested. So any modern theory of mind derives its sanction from a revaluation of an ancient concept, that new value being justified only by facts newly acquired. The same is true of many other theories of science, particularly in biology. The concept of evolution, with which

Darwin's name is so classically linked, was in his time no new doctrine, but as old as Greek philosophy. It was only from the accumulation of new facts by Darwin that it received a new and higher evaluation and was removed from the category of philosophical speculation. So, in discussing the nature of mind, any theory is entitled to a higher appraisal than it has already received only by reason of the accumulation of a new knowledge that can give us a deeper insight into the nature of the universe, of things material and immaterial.

So, let the dead bury the dead, and let us dip at once into the present-day problem of consciousness and treat the question in the light, if there be light, of present-day knowledge. Let us make a *tabula rasa* of our minds, if we can, and wipe out, as with a sponge, all inherited traditional concepts which, ingrained as accepted formulæ and beliefs, necessarily, in accordance with psychological laws, conflict with, repress and make us blind to new points of view and new interpretations of old facts in the light of new ones. A poor figure of speech, I fear, that of the sponge, for modern psychology has taught us that when concepts are deeply scratched and grooved into the mind, it takes more than a sponge, rather a grindstone, to polish it off into a *tabula rasa*. And this is particularly true when the accepted concepts are tinged with feeling tones, and, it may be, vibrate with deep and often overpowering emotion, when stirred, though unwittingly, by a problem that is quick to awaken suspicion of questioning religious faith and belief in immortality.

So let it be enough to say of past speculations dealing with the nature of consciousness that it is an old, old problem. And let us frankly recognize that we are dealing with animal consciousness as well as that of proud *homo sapiens*. We cannot, if we would honestly study this difficult problem, leave out of consideration any of the data at our disposal. We cannot, if we would be candid, make a selection from the facts which we are called to investigate and explain, and thereby limit ourselves to human experience. That would be an eclectic science with a vengeance. If we admit that animals have "intelligence," which is to say consciousness, similar in kind to that of man however inferior in degree, we must include such consciousness amongst the data involved in the problem.

It thus becomes a biological problem and may be formulated, as we shall see, Why the body has a mind.[1]

[1] This formula was suggested by C. A. Strong's book, "Why the Mind has a Body," the argument of which was based on my earlier book, "The Nature of Mind and Human Automatism" (1885).

If we are prepared to refuse to believe that animals have consciousness—that our pet dog that leaps into our lap, expresses unbounded joy, distinguishes his master from a stranger and carries out his commands; that howls with every expression of pain when punished; that our favourite horse, highly trained to obey the most delicate signals, who comes at call to eat sugar out of our hands; that the wild bird that takes flight at the slightest sound of danger and the ape that behaves sometimes better than a human being— if we are prepared to assert that these animals have no emotions, or conscious perceptions of their environment, no cognition; that their eyes and brains, like as they are unto our own, do not see with visual images, that their ears do not hear with sound, that their skins do not feel with pain; if we are prepared to insist that they are merely mechanical puppets, automata, that all this behaviour is but the expression of mechanical reflex action of the nervous system unaccompanied by any of the forms of consciousness which we experience in ourselves, then we have, of course, simplified the problem by eliminating the greater part of the data of which we have to give an account. On the other hand, we have at the same time made it more difficult of solution, because we have eliminated so much of the data, in many respects the most instructive, and reduced the problem to that of human consciousness. It can no longer be treated as a biological problem that pertains to life in general.

I venture to think that common-sense people will accept without reserve the possession of consciousness by, at least, their *own* animal pets. We are, then, with this admission, justified in treating the problem of consciousness as a biological one and so I shall do. But when so regarded, at once its range becomes enormously extended. For at one end of the scale of animal life it reaches down to the behaviour of the lower orders of animals, such as the bees and ants, the fish and the reptile. It may even, perhaps, extend to the amœba, in which very low form of life so eminent a biologist as Jennings has felt compelled to postulate some kind of consciousness. At the other end of the scale it reaches up through the mammals, the ape, the gorilla, the Neanderthal man and other semi-human types amongst which science has been searching for the lineal ancestor from which present *homo sapiens* has descended. It is the nature of consciousness as occurring in all these different forms of animal life of which we must take and give an account. Otherwise no account would be complete or final.

Very well then; if it is agreed, as I think it must be, that

animals have consciousness, let us begin with animals. I am sure you will agree with me that this will be a far better way, for then the question will cease to be one of you and me and all personal interest and bias will be eliminated. As soon as and so long as we talk about our own consciousness—about your consciousness and my consciousness—we meet with what the psychologists call resistances, unwitting though they be. These resistances, of which we may not be consciously aware, emanate from deeply ingrained "inherited" concepts and beliefs which, according to the teachings of modern psychology, inhibit and prevent any unbiased examination of new interpretations in the light of newly discovered data. There is no gainsaying the fact that the belief in dualism, which is a synonym for animism, a belief in mind as an entity apart and distinct from the body, is so generally accepted, has been so deeply ingrained in the mind of the vast majority of human beings from the time of early childhood, that any attempt to utilize the newly acquired data and concepts of science to give an explanation of consciousness and matter in any other terms becomes a question which touches our very personality. Moreover, when any habit of thought, which means opinion and prejudice and point of view, has become firmly fixed, intellectual freedom, when it is in question, becomes the rarest of intellectual traits, a *rara avis* indeed. Indeed, we are all "Fundamentalists" in some field of thought and experience. There are political fundamentalists—the "die hards"; scientific fundamentalists—the sceptics; social fundamentalists—the aristocrats; as well as religious fundamentalists. And it is well that it is so, for it is the basis of conservatism and, if it were otherwise, the world would be turned topsy-turvy in a frenzy for the new. Lucky that every new movement or thought meets with psychological resistance.

Lord Grey in the opening passage of his illuminating memoirs expresses this psychological principle far more pleasantly and, I fear, more convincingly than I can hope to do. He is speaking about contemporary opinions regarding the events which led up to the Great War, but what he says is equally applicable to strongly entrenched opinion in other fields: "Many of the war generation," he writes, "have formed opinions that nothing will modify, and are dominated by predilections or prejudices that have become an inseparable part of their lives. With such people mental digestion ceases to be able to assimilate anything except what nourishes convictions already formed; all else is rejected or resented; and new material or reflexions about the war are searched, not for the truth, but for fuel to feed the flame of preconceived opinion."

And, likewise, it is in accordance with psychological law that when the conventional conception of the nature of our own consciousness is brought into question, suspicions, though unconscious and unavowed, spring into being. There is fear that the consequence of any new interpretation may eventuate in the weakening of the moral values of our ideals, or the negation of some valued religious concept such as immortality, touching, as they do, the happiness and the aspirations and spiritual welfare of all of us.

And so let us talk about apes and dogs and crawfish and such things—that is not personal. Let us approach the problem we have taken in hand as a broad biological one and therefore as one of animal consciousness; of that of your pet dog. Perhaps we shall be able to arrive at some satisfactory solution or rather theory—for that is all we can hope for in the light of present knowledge—and perhaps not. But if we are fortunate enough to do so, we can then see how far our personal resistances will allow us to apply our solution to our own consciousness.

II.

The problem of the nature of mind is inextricably involved in that of the Mind-Body problem, the relation of conscious processes to their correlated brain processes, and one cannot be considered apart from the other. Indeed they are one and the same. But in dealing with these questions we are met with the two very old rival hypotheses of Dualism and Monism. I shall have something more to say about these hypotheses later. Meanwhile the first question to be answered, if it can be answered, is: What is the relation of the consciousness of animals to their bodily processes; or, more specifically, to their brain processes?

Do their conscious processes determine their bodily behaviour, and, if so, what is the relation between the two by which one acts upon the other? By what relation are desire, feeling and sensation so associated with brain processes that the former determine the behaviour of the animal? For whatever view be held of the Mind-Body problem, there is no escaping the indubitable fact that, when viewed *physiologically*, the activity of the muscular system, the gland system and that of the organs of the body generally, make, with the activity of the nervous system—of which we need now only consider brain processes—one continuous closed system in which there is no place for the intercalation of consciousness. From the ingoing stimulus through the brain and out to the muscular system and organs of the body eventuating in behaviour, there is only

one chain of events and this chain is purely physical—nerves, spinal cord, brain, muscles. It is a purely physical circuit. And plainly behaviour of the animal, though it experiences desire, feeling and sensation, is and necessarily must be determined by the brain process as the central impulse-sending factor in this chain of physical events. Where, then does consciousness come in? What part does it play? How can it play any part? If the brain process determines the behaviour of the animal, how can desire and feeling and sensation do it too? Can it be that the brain process induces feeling, and then, in turn, feeling induces the out-going brain process? That would mean that a certain quantity of energy of the physical process disappears to be replaced by an equivalent quantity of feeling; and correspondingly this quantity of feeling disappears to be replaced by an equivalent quantity of energy. For that is what the law of "correlation of forces," one of the fundamentals of physics, would require, as John Fiske pointed out, many years ago, as a weighty objection to "materialism." The impossibility of bringing feeling, or consciousness, into the physical equation is manifest. Indeed, *as so stated*, the law would be senseless. Furthermore, aside from this incompatibility, this conception includes the postulate that feeling can act upon atoms and molecules conceived as material realities. But as Lange, the German philosopher, declared, "Were it possible for a single cerebral atom to be moved by 'thought' so much as the millionth of a millimeter out of the path due to it by the laws of mechanics, the whole 'formula of the universe' would become inapplicable and senseless."

III.

In the latter part of the last century wide public interest in this question was aroused by the discussions of eminent physicists, biologists and psychologists, such as Tyndall, Huxley, Herbert Spencer, Bain, and the brilliant mathematician Clifford. They spoke from the point of view and in the light of the knowledge given them by the science of their time. Tyndall, whose addresses gave rise to considerable hostile feeling, formulated the question in the following terms:—

"The discussion . . . turns on the question, Do states of consciousness enter as links into the chains of antecedence and sequence, which give rise to bodily action and to other states of consciousness, or are they merely *by-products*, which are not essential to the physical process going on in the brain? Speaking for myself, it is certain that I have no

power of imagining states of consciousness interposed *between* the molecules of the brain, and influencing the transference of motion among the molecules. The thought 'eludes all mental presentation,' and hence the logic seems of iron strength, which claims for the brain an automatic action uninfluenced by states of consciousness. But it is, I believe, admitted by those who hold the automatic theory that states of consciousness are produced by the marshalling of the molecules of the brain; and this production of consciousness by molecular motion is to me quite as unthinkable as the production of molecular motion by consciousness. If, therefore, unthinkability be the proper test, I must equally reject both classes of phenomena. I, however, reject neither, and thus stand in the presence of two incomprehensibles instead of one incomprehensible."

Huxley in a famous address accepted the logic of "iron strength" and committed himself frankly to the opinion that the "consciousness of brutes and men would appear to be related to the mechanism of the body simply as a collateral product of its working, and to be as completely without the power of modifying that working, as the steam whistle, which accompanies the work of a locomotive engine, is without influence upon its machinery".

Again: "It seems to me that in men as in brutes there is no proof that any state of consciousness is the cause of change in the motion of matter of the organism. If these positions are well based it follows that our mental conditions are simply the symbols in consciousness of the changes which take place automatically in the organism; and that, to take an extreme illustration, the feeling we call volition is not the cause of a voluntary act, but the symbol of that state of the brain which is the immediate cause of the act".

The lecture in which he gave expression to this view exposed him, in consequence, to a storm of vituperation and abuse, which might have overwhelmed a less fearless and able man than Professor Huxley.[1]

I cite the views of these two famous scientists because they expressed the attempts of science of that day to answer the question before us in the light of the existing knowledge, and they well present the insoluble difficulty of the doctrine of two entities and parallelism. My attempt will be to avoid this difficulty and to answer the question in the light of the present day knowledge and concepts of science. Very pos-

[1] See my "Nature of Mind and Human Automatism," 1885, pp. 23, 24 and 107.

sibly the answer of to-day will have to be revised at some future day in the light of still newer knowledge.

The logic of Huxley and Tyndall was met, as I have said, by a storm of protest as, I think, it should have been met, not because the logic was faulty, but because the premise which they accepted of the nature of the atom and molecule, that is to say of the nature of matter, we now know to be untrue. The concept of matter has become completely revolutionized. This is the key to the whole problem as I hope to be able to make evident. And yet it is curious that there are some psychologists of standing to-day, belonging to the new behaviouristic school, who are "steam whistlers," as we may call them, still holding that consciousness has nothing to do with the behaviour of man or animal and that, therefore, we are all automata.

There are, then, three theories that have been advanced to explain the nature of the mind and its relation to bodily processes. Two are comprehended as *Dualism* and one as *Monism*. Of the dualistic theories—often regarded as doctrines, so accepted have they become as beliefs—one may be termed *epiphenomalism* or *parallelism*. It postulates consciousness as a unique entity which has nothing in common with physical events. Accepting the concept, as laid down by the older science, of the nature of atoms and molecules of matter; and accepting the "unthinkability" of this entity acting upon *such* atoms and molecules and entering into the chain of those physical brain events which physiologically are proven to determine bodily actions, it is perforce compelled, by the logic of "iron strength," to suppose that conscious processes proceed contemporaneously side by side with and parallel to the physical processes of the brain. Feeling, desire, volition, can have nothing to do with determining the activities of the animal. No matter how intelligent and purposeful this behaviour may seem, it is only the mechanical resultant of purely reflex processes. Consciousness is only an epiphenomenon and animals are automata. Such is the doctrine of parallelism.

Of course this theory is extended to man, otherwise it would have no interest for us here. But in thus extending it, it disregards the common-sense view derived from human experience, that our desires and volition do determine and are responsible for our behaviour. It takes no account of the fact that, as a matter of common sense, society, in all its relations, in its codes of law, of ethics and morals governing the relations of men to one another and to society as a whole, is based upon the principle that our consciousness *is* the cause

of our actions and that the responsibility for these rests upon our conscious will and not upon the gray matter of our brains.

I have thought it wise to dwell for a moment on this, as it seems to me, outgrown theory, because there are not wanting, as I have said, psychologists who maintain it to-day as the true scientific explanation of human and animal behaviour.

The second form which Dualism takes is *Interactionism*. It accepts the older concepts of the atom and molecule of science but disregards the logic of "iron strength." It also accepts parallelism and the proven facts of physiology; but resting, by analogy with the common experiences of man, on common sense, it maintains that consciousness of brutes does act upon atoms and molecules, and that consciousness is the cause of bodily behaviour, though we may not know the How. That is the mystery, one that is accepted as inexplicable. It may be here worth while pointing out that the spiritualistic interpretation of the phenomena of which we nowadays hear so much, propagated by spiritualists and alleged to be due to disembodied minds acting on mediums, is based on the theory of Interactionism.

The third hypothesis, *Monism*, rejected in the past, but on philosophical grounds, the notion of the nature of matter—of the atom and the molecule—as conceived by science in the latter part of the last century, and in this rejection has been vindicated by the new knowledge of modern science. It also accepted the logic of "iron strength" which gripped the "steam whistlers" and parallelists; but in rejecting their notion of matter it rejected their major premise. Their conclusion, therefore, fell to the ground. And this was maintained for another reason: that the conclusion was not in accordance with common sense and common human experience when the theory was extended to man.

Now, on the basis of the new concept of matter which the new knowledge offers, science itself is, as I believe, for the first time in a position to give its support to Monism and offer an hypothesis which gives us an insight into the nature of mind and its relation to bodily processes. Viewed from the standpoint of this concept, the notion that "states of consciousness" may "enter as links in the chain of antecedents and sequences which give rise to bodily actions" is not only *not* unthinkable, but is quite intelligible; and it renders comprehensible both *that* and *how* feeling and thought are the cause of behaviour. This new knowledge of matter even allows us to go further and say that a cerebral atom *can* be moved by "thought" without the whole "formula of the universe" becoming "inapplicable and senseless," though Lange's

statement was wholly sound under the old criterion of the atom. Indeed I think it is well within bounds to say that the new concepts of science are destined to give us an entirely new conception of the universe. As one writer on the atom has said, "for the first time in centuries there exists the material which a genius could synthesize into a universal science, in which physics and chemistry, biology and geology, will lose their identities in a common set of principles".[1]

I trust it must be apparent from what has been said that the problems of the nature of mind and its relation to the body cannot be separated and that they are in reality one problem. But the key to the problem is the nature of "matter". Indeed, so it seems to me, that is the real problem rather than the nature of mind. So long as the old notion of matter prevailed it was impossible from the standpoint of science to find a solution. And it must be kept in mind that it is only from this standpoint that we are viewing the question, not from that of philosophy and epistemology. So long as physics and chemistry had offered an incomplete and erroneous notion of the nature of atoms and molecules, how was it possible for physical science to find an adequate theory of the correlation of mind and body? Was it not futile for science to attempt to correlate mind with something that does not exist? I say does not exist, for matter as it used to be conceived, it is now agreed, as a result of modern researches in physics and chemistry, has no real existence. Is it any wonder that Huxley in 1874 in a lay sermon, much as this modest address may be regarded, found it impossible to reconcile the facts of consciousness with those of the material world?

V.

Let me premise that any theory that would offer an adequate explanation of the problem we have in hand must satisfy certain conditions.

1. It must recognise and take into consideration the immateriality—the spirituality, if you like so to term it—of mind.

2. It must recognise and accept the physical and physiological conception of the continuing chain of events of the nervous system by which behaviour is determined.

3. It must provide for consciousness entering into that chain of events, which Huxley and Tyndall thought was unthinkable.

[1] John Mills, "Within the Atom," p. 9.

4. It must recognise and accept the psychological conception that volition and feeling and other conscious processes are the cause of our actions.

5. It must recognise and be compatible with the law of correlation of forces and conservation of energy.

6. It must recognise and accept the modern conceptions of physics and chemistry of the nature of "matter" and "force" and reconcile these with the immateriality of physical processes.

7. It must recognise and explain the apparent duality of mind and matter.

8. It must not be incompatible with any known established fact.

Some job, you will say. If I am rash enough to undertake it, it is because for the first time we have the material to take the problem out of the field of philosophy and approach it from the standpoint of science.

The modern conception of matter clarifies and simplifies the physical data of the problem, though the nature of the problem itself remains the same. In the days of Huxley and Tyndall the atom was supposed to be the unanalysable unit of matter. It is only in recent years that it has been shown that the atom of every element is, on the contrary, a sort of microcosmic solar system; for every atom is a complex of units of negative and positive electricity, the units of the former revolving in orbits around a nucleus of the latter. The significance of this conception for our problem I cannot express in language better than I have elsewhere used. In sum and substance "matter," as we know it through our senses, has disappeared, having been resolved into negative and positive electricity, or more specifically units of the same in motion, acting and reacting upon one another and associated with, or more probably being in themselves, units of energy. Consequently all the physical and chemical properties of so-called "matter" are nothing but the activities of electricity.

This is a marvellous conception and a marvellous reconstruction of our knowledge. The properties of matter, such as mass, hardness, crystallisation, atomic weight, chemical affinity and reactions, are resolved into the activity and manifestations of units of electricity; while that which we apprehend directly as heat and light and indirectly as ultra-violet rays, X-rays, radio rays, and other rays, are modes of electro-magnetic motion, shot out by the energy of such electrical units.

When we look out upon the world of objects about us we must recast our mode of viewing them and of thinking. We

must learn to think in terms of those mysterious concepts, electricity and energy, if we would try to resolve the deeper, ultimate problems of life and mind, as well as those of the physical world. When we look out upon the rocks and houses and trees and plants and animals, we must try to view them in terms of billions upon billions of negative and positive electrons—electrical units in tremendous activity and motion, sometimes sending out units of energy into the world of space and always acting upon our senses in such fashion that we apprehend them all, not as they are, but as material objects. The only known constituent of the ponderable matter of the universe is electricity.

But what about the brain processes of the physiologist? These we apprehend *as such* in the same way as we apprehend the rest of our material world. And, though we conceive them in the form of atomic or molecular activity, physical or chemical, they too disappear under the analysis of the physicist. Let us not forget that we must likewise learn to think of these activities as those of enormously complex groups (called atoms and molecules) of units of electricity, and groups of groups, motivated by and associated with units of energy and, perhaps, radiating energy.

But what is a unit of electricity, the electron, from the standpoint of the physicist? Here we are apt to be misled by the limitation and connotations of language. As Bertrand Russell warns us, "Our imagination is so incurably concrete and pictorial that we have to express scientific laws, as soon as we depart from the language of mathematics, in language which asserts much more than we mean to assert. We speak of the electron as if it were a little hard lump of matter, but no physicist really means to assert that it is. We speak of it as if it had a certain size, but that also is more than we really mean."

In the name of exact science, then, what do physicists mean? I fear, in spite of Bertrand Russell's charitable words, that some have just such an "incurably concrete and pictorial imagination," that they mean just what their language implies, and that it is only the rather rare physicist of profounder and more philosophic thought that is not misled by word symbols.

If the electron could speak what would it say? "Ho, ho!" it would say. "Ho, ho! Prof. Whitehead! Ho, ho, Prof. McDougall! Ho, ho, Prof. Lyman![1] So you think I am a

[1] My apology to these distinguished representatives of philosophy and science at Harvard whom I imagined to be present in the audience, and I trust they will not take ill this personal reference. I have no notion what

little hard lump of something that you can weigh and measure? Not a bit of it! That is the way your "incurably concrete and pictorial imagination" sees me, because that is the way I affect your visual apparatus, your visual sense. You only apprehend me objectively through your poor, little, limited, inadequate senses as a negative or positive electron. I am the Reality of the universe. I am the Energy of the universe. I am the Immateriality of the universe. You cannot see me as I really am. Don't you know you can never know what I really am by your methods? I am the Unknown and Unknowable of physics. You only see and know me from *without*. I know myself from *within*. You only know and see what I do. You discover only the laws of my behaviour and you call me electricity and energy. But these are only word pictures or concepts of your own mind. Sometimes you are pleased to call me "force," but that is a concept derived from your own conscious experience. You are conscious when you meet with resistance, or when you move your body and material objects, of a feeling of exerting force or energy. But that is a subjective feeling. Nevertheless, when you see motion of other things, when you see me moving, you think in terms of feeling and say I have 'force'; that the activities of all electrons are determined by force. But that is only a subjective concept of yours; you are thinking anthropomorphically. All you see and know is that things *happen*, and the conditions of their happening are your laws. Why, you do not know. *I*, a mysterious electron, know but I will not tell, because you would not understand. I am the great mystery.

"But we electrons are just units of that which you are pleased to postulate and call energy and force and electricity. But we are not what you mean by these names. You know very well that your postulates are only convenient concepts of physics to work with; that they are symbols of something else; and when taken literally lead to misunderstandings. And so I say we are units of the *reality of those concepts*—of the Real Universe, the universe from within. We are immaterial. It is our behaviour that you apprehend and measure and you call our behaviour electrons.

"When we immaterial units are marshalled in certain groups, numbers and configurations and move in certain orbits, you apprehend a whole group *through your senses* as atoms of the elements—hydrogen and oxygen and carbon and nitrogen and gold and silver, and all the rest. And

their personal views may be of the electron. I address them only symbolically as personifying philosophy, psychology and physics.

when we behave in a certain way you recognise our behaviour as the chemical and physical properties of these atoms. And when those groups of us that you recognise as atoms of hydrogen are collocated with those groups that you recognise as an atom of oxygen, we become what you recognise as a molecule of water, or some other compound. And the physical and chemical properties of this compound are only our more complex behaviour. We do lots of things that I cannot stop now to tell you about; and if I did you could not understand, because you only know us from without as physical. We know ourselves from within as immaterial.

"But you know very well that as we become marshalled in greater and greater numbers in more complex combinations, in what you call and apprehend as atoms, and compounds of atoms, until we verily swarm like bees as molecules of organic substances, then the properties of the compounds *correspondingly* vary until they even exhibit the phenomena of life, and in the brain processes we emerge as the activities of mind."

And what would the philosophically-minded physicist say to all this? He would say the electron is right: and he would agree that when we think of brain processes of an animal—don't forget we are talking of your pet dog—we must learn to think of processes, physical or chemical, in terms of their final analysis; that is, processes of which the component factors are mysterious concepts termed units of negative and positive electricity, or mysterious units of energy, which are probably one and the same thing.

Beyond this the objective methods of science cannot give us the faintest idea of what concretely a brain process of a dog, or any animal, or a human being, is. We must not overlook that fact.

And we must not forget, what the physicist sometimes does forget, that electrons are not ultimates. In a sense they are only word pictures. *They are only phenomenal manifestations of an unknown something.* And the unknown something is that which is postulated as the energy of the universe. But the nature of this something the physicist cannot even guess at. He can only postulate concepts—the *immaterial* entities electricity and energy, to account for certain phenomena which he aprehends as and calls matter. But these entities are not only unknown but unknowable by the objective methods of science. The postulated something may be "spiritual," if we wish to so term it, or of the order of the physical, or something else that is *not* matter. Whatever it is, it is not material in the sense of the material,

phenomenal world as known to physics and to account for which it is inferred. It is *immateriality*.[1]

This is no new conception. It has long been held by philosophy and is not strange to science. Nevertheless I would ask you to dwell for a moment upon the significance of the conception, hackneyed though it be, the immateriality of that which we apprehend by the laws of our senses as matter. So long as the old notions of matter prevailed—that atoms were the ultimates of science—it was only philosophy that could fully grasp, could take in, that, while we are living in a real universe, this real universe is totally and absolutely unlike the universe of our senses. But in these latter days when "matter" has been resolved into the phenomena of energy, called electricity, which is itself immaterial and the ultimate nature of which is unknowable, it is easier for our minds to think of the universe as immaterial. I cannot see that language has any positive term which is applicable to the real universe without connoting something that we do not mean. The most we can do is to define the real universe in negative terms, telling what it is not, and so say it is "immateriality". We might call it "spiritual" though that term has been pre-empted in its common usage and implies more than we would mean. At any rate the real universe is immaterial, though that immateriality manifests itself to us objectively through that which we apprehend as energy and electricity.

VI.

The physicist now has finished his job and has gone as far as he can go. So he hands over his concepts to two other branches of science, to the psychologist and physiologist, and he says to them: "Here is my new material: what can you do with it to solve your problem? Can you, O Psychologist, explain by means of it how volition and feeling can determine behaviour? And you, O Physiologist, can you now understand how consciousness can enter into the chain of physical events in the brain?"

And these two scientists both say, "Thank you; you have now given us for the first time in centuries the material which enables us to form a comprehensible theory of the nature

[1] In this and some other passages below I have drawn freely from the text of a previous address of my own, "Three Fundamental Errors of the Behaviourist and the Reconciliation of the Purposive and Mechanistic Concepts" (Powell Lecture, Clark University, Dec. 15, 1927; published in "*Psychologies of* 1925," Clark University, 1926), in which I made use of this same theory of mind.

of mind and its relation to the body. At last you have taken the problem out of philosophy, and we can answer the question, why the body has a mind and the mind has a body."

"Your ultimate unknown something," these scientists say, "your immaterial energy of the universe is the same *in kind*, is of the same nature, as mind. The same in kind," they say, "because mind does not come into being, does not emerge, until the units of the immaterial universe are assembled in those extremely complex combinations, configurations, and arrangements that are to be found in the nervous system."

If this be true, then you must see that that portion of the immaterial energy which reveals itself to our senses (in, for example, the dog or the ape) as (hypothetical) brain process, is the immaterial reality of that process, is the consciousness of the animal. They are one and the same thing, immaterial mind being the reality and brain process the mode in which it is objectively apprehended as matter. We may say that *Mind is made out of the same immateriality as is the phenomenal universe.* This immateriality bursts into flower, emerges as consciousness, when its units are collocated in enormous numbers in certain highly complex combinations and become activated in a correspondingly complex manner. This immateriality, and consequently the elements of which mind is composed, are the reality of the universe. There would, indeed, seem to be no reason why we should not say, as not contradicting anything we know, that physical energy-in-itself and psychical energy are identical in kind. And out of the immaterial energy of the phenomenal physical universe consciousness, or mind, has emerged in the process of "emergent evolution". Expressed again in another way we may say, if I may repeat what I have said elsewhere, consciousness is the *reality* of a particular combination of units of energy, of the energy of the universe in itself, the unknowable of physics, the brain processes (of the physiologist) "from within". Thus the psychical becomes identified with that which is postulated by the physicist as the unknowable energy of the universe, by the physiologist as the brain process. Hence the theory is essentially monism. For mind and so-called "matter" have in their essence become identified. Indeed the real problem is, as we shall further see, one of *identification.*[1] It is not an easy notion for the imagination to grasp, for it cannot be pictured in concrete

[1] See my paper "The Identification of Mind and Matter," *Philosophical Review*, vol. xiii, No. 4, 1904.

images. It can be formulated only in abstract terms as a concept, or after the fashion of a mathemetical formula.

Obviously then, says the psychologist, it makes no difference whether you explain behaviour in terms of nervous processes or of volition and feeling, for they are one and the same thing. And the physiologist says: Of course consciousness enters into the chain of physical events of the nervous system; for the immaterial reality of the physical brain process is consciousness.

Finally, testing the theory by the eight conditions laid down at the beginning, it is easy to see that it satisfies each and all. It accepts the immateriality or spirituality of mind; it is compatible with the physiological principle that brain processes (as well as mind) determine behaviour; it renders intelligible how consciousness can and does enter into the chain of physical events; it satisfies common sense which demands that feeling and volition are the cause of bodily activities and are not simply "symbols in consciousness"; it satisfies the law of correlation of forces and conservation of energy; it accepts the modern conception of matter and "force" and recognises and explains the apparent duality of mind and matter; it does not contradict any known fact of consciousness or physical science.

Now see how by this theory the real problem interestingly shifts. It is no longer the old parlous problem of parallelism, which has been the thorn in the flesh of psychological science. The theory relegates the epiphenomalism of the steam-whistle to that limbo where such absurdities belong. Interactionism, too, disappears as a problem; for, there being *only* one process, there ceases to be the question of how one kind of process, the mental, can act upon another of a different kind. Instead of these the real problem becomes, if consciousness and so called "matter" are identical in kind: How is it to be explained that animal consciousness—feeling, image, colour, pain—can appear under such different forms as units of electricity and electro-magnetic motion? Surely, in ourselves, our experiences of the two are totally unlike. Here is a seeming paradox—but seeming only.

The answer is simple and obvious. Electricity and energy are the mode in which the immaterial *reality* of the brain process—*i.e.*, the animal consciousness—is apprehended, actually (or ideally), through the senses by another organism, the reaction of this organism to the reality; in fact it is the only mode by which, if apprehended by a second organism, it could be apprehended. For a moment's reflection must make it clear that, if apprehended through the senses, it must

be in terms of those senses; if through the visual sense, it must be apprehended as visual perception—form and motion; if through the auditory sense, as sound; if through the tactile sense, as tactile perception; and so with the other senses.

VII.

We have been considering solely animal consciousness. But you and I know that that was only a sort of camouflage. All along we have had the thought of human consciousness in the background of our minds and the realisation that what was true of animals must be true of man. We knew perfectly well that that was where we were coming out. Indeed, the assumption that animals have consciousness was based on our own consciousness and that the two were alike in kind though not in complexity and degree. Well, then, the principle of continuity forces the acceptance of the application of this monistic theory to man. For in the continuous line of ascent from the lowest order of mammals up through the dog, the ape, the Neanderthal and other types of prehistoric man to man as he exists to-day, there is no stopping-place where we are entitled to say that consciousness becomes different in kind, undergoes a change in its intrinsic nature and in its relation to the ultimates of the brain processes. Still further descending to the very lowest levels of animal life, meeting at each stage as we go down evidences of more and more primitive and even primordial types of consciousness until we reach what we can only postulate as mere sensibility in the amœba, we realise that we have in this monistic theory a principle that is capable of explaining the problems of life and mind in terms of a universal concept. For this concept allows us to interpret the manifestations of both in terms of varying complexity and arrangement of units of the energy of the universe.[1]

We can now answer the question "Why the body has a mind?" When the marshalling of the units of the immaterial, the spiritual energy of the universe, which is the body, reaches a certain complexity; this immaterial body *is* the mind.

If this theory of the relation of consciousness to the physiological processes of the body be the legitimate interpretation

[1] For the development of this biological conception of consciousness I would refer to my paper "Awareness, Consciousness, Co-Consciousness and Animal Intelligence, from the Point of View of the Data of Abnormal Psychology—a Biological Theory of Consciousness"; (*Intern. Cong. of Psychol.*. Oxford 1923) published in "*Psychologies of* 1925," Clark University, 1926.

of the modern theory of matter and energy, bearing as it does on the question of the survival of consciousness after dissolution of the body, what has science to say to this question? The average man is not interested in scientific theories and to him this is the only question of practical interest. Well, the history of science and of human thought ought to teach us humility and it is wise not to dogmatise or feel sure that we have attained the ultimate truth. But I can see no escape from what seems to me the logic of "iron strength" that compels the conclusion that if consciousness is the resultant of an enormously complex organisation of units of that immaterial entity which is the real universe and which manifests itself, but only objectively, to science in an unreal form as "matter," that when that particular organisation has become disintegrated by death, the mind itself must cease to exist. This would seem to be the inexorable logic of the hypothesis; and there would seem to be no other hypothesis that does not leave the problem of the relation of consciousness to the body as an inscrutable mystery, or lead to consequences that are, as Tyndall said, unthinkable.

But mind you, I have said not "survival," but survival of *consciousness* as we empirically know it. Whether there is any other kind of survival, a survival of some entity of which we have no experience, a soul—as distinct from the mind, that is something beyond the province of science, something about which science can have no opinion whatever.

The principle of continuity again rejects the notion of the survival of consciousness unless we grant that same survival to every species of animal to which we ascribe mind, including the prehistoric Neanderthal man and his like.

There are also a vast number of facts in the realm of pathological consciousness, such, for example, as the mind of the idiotic cretin, not restored but generated to normalcy by a few doses of an extract of the thyroid gland—a fact which seems almost impossible to reconcile with any theory of survival of consciousness. For what would have survived if the glandular extract had not been given? But to consider such facts of pathology here would carry us too far afield.

Thus we can say that for the first time physics and chemistry and physiology and psychology and biology have furnished us with the material which some genius some day can "synthesize into a universal science in which these and other sciences will lose their identity in a common set of principles."

II.—WHAT DOES MR. W. E. JOHNSON MEAN BY A PROPOSITION? (II).

By H. W. B. Joseph.

(16) The next sense in which I seem to find the word *proposition* used is, that it is a statement about the truth or falsity of other statements. This may seem ridiculous; for in giving an account of what a proposition is, λέγει πάλιν ὡς εἰδόσιν:[1] it introduces into the account again the word to be explained. And as under (15), so here I do not think Mr. Johnson ever, so to say, gives to himself this account of it. But I think that he gives this account of some propositions, which are really statements about what is real; and that the error (as I take it to be) profoundly affects his logical doctrine. For it affects the whole doctrine of implication (which, as we have seen, is 'manifested by nothing in the merely objective world'), and of propositions as that towards which various kinds of assertive attitude may be adopted.

In Mr. Johnson's view, I use the form of words 'The sun moves' when I wish to assert the proposition 'that the sun moves'. That the sun moves is what I may doubt, suppose, affirm, deny: but proposition it is; it contains the 'characterising tie,' and not the 'assertive tie'. When then I affirm that the sun moves, if the affirmation is a proposition—and it is a statement, and we have seen how constantly 'proposition' and 'statement' are equivalent terms—it is one about a proposition: 'that the sun moves is true'. At I. 52, Mr. Johnson finds difficulty in distinguishing 'p is true' from the proposition p, and questions whether 'p is true' is really a secondary proposition, *i.e.*, one about a proposition. He finds help in considering that 'the adjective *true* has thus an obvious analogy to the multiplier *one* in arithmetic'. I am not convinced of this; the reflexion that gives rise to the statement that a proposition is true does not seem to be like the operation expressed by 3×1. I am led rather to consider that we mean by saying that a proposition is true to say that it expresses the thought of some one thinking

[1] Plato, *Rep.*, VI, 505 C.

truly. I accept the doctrine of I. 4, that 'the customary expression that such and such a proposition is false merely means that anyone's assertion of it would be erroneous,' with two qualifications; firstly, I should say 'false' rather than 'erroneous,' for the terms 'true' and 'false' themselves are primarily applicable to opinion, and only secondarily to propositions (the Greeks were fortunate in possessing a single word *ἀληθεύειν*, to think truly, as well as *ψεύδεσθαι*, to err); and therefore secondly, it is the thinking rather than the assertion which is false or erroneous, and the assertion only as expressive of the thinking. So far, however, as we use words in thinking, the assertion and the thinking need not be distinguished; and since doubting and supposing are also activities of thought, the word 'assertion' is even defensible, as distinguishing the kind of thinking meant; I only wish to insist that it is the act of the mind, not the 'enunciation,' that is in question.

If this be so, however, what do I assert or assertorically think? The answer which every one, I suppose, would like to give is—Something real, some fact. And when my thinking is knowledge, that answer should serve; knowledge is of that which is. Our troubles arise, because so much of our thinking is tentative, and so much mistaken. I may know that the sun's a fire; but I may also doubt it; and I may think that the sun moves, and discover that it does not. Hence the temptation to treat doubt, assertion, etc., as attitudes of thought towards that which is expressed by (say) the words 'that the sun moves'. But they do not stand for or describe what is real; for the sun's movement (at least the movement of it in question, round the earth) is not real; and so the propositition becomes a *Zwischending*, and the assertion a statement about that. And the realm of these *Zwischendinge* has many mansions; there is room in it for the merely supposed, the true, even the false. It has been said that the true have a peculiar relation to an entity called existence; but in his latest theory of truth, Mr. Russell at any rate rejects the realm of the false: he no longer thinks there are false objectives. Nevertheless the doctrine that our statements are about these objectives[1] or *Zwischendinge* remains; only, whereas true statements point towards their objectives, the corresponding false statements point from them. This, it seems to me, is *se payer de mots;* for what is pointing from the objective 'that the sun moves' except pointing

[1] *Analysis of Mind*, p. 273. I do not cite Mr. Russell as authority for Mr. Johnson's views, but I think that both betray a belief in these *Zwischendinge*.

falsely towards it? There is perhaps another advantage which this theory of propositions has seemed to offer. Mathematicians are puzzled at times to say what that is whose relations they are investigating; an answer is provided when we are told that 'Pure mathematics is the class of all propositions of the form p implies q, where p and q are propositions containing one or more variables, and neither p nor q contains any constants except logical constants.' [1] So the propositions of mathematics at any rate are propositions about propositions, and as mathematics is but an extension of logic, should not the same be true of logic also?

This brings me to the doctrine of implication, with its paradoxes, and Mr. Johnson's interesting discussion of these. I start from the *Table of Equivalences of Composite Functions* at I. 32. A composite function of two *single* propositions p, q is formed out of them by the help of the words *if . . . then, not-both . . . and, either . . . or;* and the following four equivalent composite functions are set out by name, where $\bar{p}$ means *not-p*, and $\bar{q}$ means *not-q:*

Implicative Form	Counter-implicative Form	Disjunctive Form	Alternative Form.

If p, then q = If $\bar{q}$, then $\bar{p}$ = Not-both p and $\bar{q}$ = Either $\bar{p}$ or q. (Mr. Johnson adds the equivalences where the implicative form contains $\bar{p}$ or $\bar{q}$ or both of them, instead of p or q, but no fresh question is raised thereby, and I omit them.) Now one may ask, of what are these four forms equivalent forms, and what is meant by 'equivalent'? In the previous section 'the notion of *equivalence* (expressed by the short-hand symbol ≡) is taken as ultimate and therefore as not requiring to be defined'. But there we were concerned with the equivalence of 'p and p' to 'p': of 'p and q' to 'q and p': of '(p and q) and r' to 'p and (q and r)'. There, as it seems to me, equivalence meant that different forms of statement, or of symbolic notation, had the same meaning. It is not apparent that this is meant here. Here also the 'short-hand symbol' used is =, not ≡, and we are not told whether the change is significant. Let us turn then to the previous question, of what are these equivalent forms the forms? No doubt the first approximation to an answer is to say 'of composite function'. But what is meant by the answer? As far as I can see, one of these two things: either (1) that they are really different functions, *i.e.*, different in meaning, but when one is true, so are the others, or (2) that they are one function, so far as meaning is concerned, but

[1] B. Russell, *Principles of Mathematics*, p. 3.

differently expressed, in words or symbols. The second interpretation alone seems to me to justify calling them equivalent. It is also supported by Mr. Russell's usage, who tells us that by '*p* implies *q*' he means merely that either *p* is false or *q* is true. And it is only so that the 'paradoxes of implication' follow, *viz.*, that a false proposition implies, and a true proposition is implied by, all propositions. So we read on p. 39: "Consider the alternative 'not-*p* or *q*'. If this alternative were conjoined with the assertion '*p*,' we should infer '*q*'. Hence, 'not-*p* or *q*' is equivalent to 'If *p*, then *q*'. Similarly, '*p* or *q*' is equivalent to 'If not-*p*, then *q*'".

Let me continue the quotation: "Now it is obvious that the less determinate statement '*p* or *q*' could always be inferred from the more determinate statement '*p*': *e.g.*, from the relatively determinate statement '*A* is a solicitor' we could infer '*A* is a solicitor or a barrister,' *i.e.*, '*A* is a lawyer'. Hence, whatever proposition *q* may stand for, we can infer '*p* or *q*' from '*p*'; or again, whatever *p* may stand for, we can infer 'not-*p* or *q*' from *q*. Hence (i) given *p*, we may infer 'If not-*p*, then *q*,' and (ii) given *q* we may infer 'If *p*, then *q*,' whatever propositions *p* and *q* may stand for. These two consequences of the uncritical acceptance of traditional formulæ have been expressed thus: (i) A *false* proposition (*e.g.*, not-*p* when *p* has been asserted) implies *any* proposition (*e.g.*, *q*): (ii) A *true* proposition (*e.g.*, *q*, when *q* has been asserted) is implied by *any* proposition (*e.g.*, *p*). Thus '2 + 3 = 7' would imply that 'It will rain to-morrow'; and 'It will rain to-morrow' would imply that '2 + 3 = 5'. That these two implicative statements are technically correct is shown by translating them into their equivalent alternative forms, *viz.*: (i) 'Either 2 + 3 is unequal to 7 or it will rain to-morrow'; (ii) 'Either it will not rain to-morrow or 2 + 3 = 5'. We may certainly say that one or other of the alternants in (i) as also in (ii) is true, the other being of course doubtful."

In this passage, I do not see the force of the words in parentheses, 'when *p* has been asserted' and 'when *q* has been asserted'; but I defer consideration of them till (17); neither do I see why these two paradoxes are consequences of 'the uncritical acceptance of traditional formulæ'; I should suppose them consequences of the uncritical assumption of the equivalence of these formulæ. But the criticism I have to offer begins a little earlier.

Surely it is not true that from the proposition '*p*' I can infer '*p* or *q*'. Mr. Johnson's example astonishes me. If I

know that solicitor is a species of lawyer, and that an instance of a species is an instance of its genus, I can of course infer from 'A is a solicitor' that 'A is a lawyer'; but the knowledge that barrister is another species of lawyer is quite irrelevant to this inference, and Mr. Johnson's doctrine that 'p or q' can be inferred from p has nothing to do with the relation of species and genus. I agree that the being of any genus is less determinate than that of its species, and that if I only know heaven to be either a state or a place, my knowledge is less determinate than if I know it to be a state; but 'solicitor' is not more determinate than 'solicitor or barrister' in the sense in which it is more determinate than 'lawyer'. Such a contention would knock the bottom out of Mr. Johnson's whole doctrine of determinate and determinable, and identify the genus with the aggregate of its species. If A is a solicitor, he is a lawyer; for to be a solicitor is a way of being a lawyer; but if heaven is a state, it is not a state or place; to be a state is not a way of being a state or place. Inference is a movement from knowledge to knowledge, not from knowledge to ignorance; but if I could lapse from the knowledge that heaven is a state, to the knowledge only that it is a state or a place, I should in the process of inference have ceased to know the premise from which I started. When does a man express his mind in such a form of words as 'x is either y or z'? When he thinks it is one or other, but is uncertain which. And when does he express it in such a form of words as 'x is y'? When he is certain which it is. How then can the first express what he reaches by inference from that which the second expresses? And what can have led Mr. Johnson to so extraordinary a doctrine?

I suggest that he fell into it by inadvertently confusing a statement with a statement about a statement. When I say that heaven is a state, I am thinking about heaven; but when Mr. Johnson infers 'p or q' from 'p,' he is thinking about statements about heaven. Supposing I know the statement that heaven is a state to be true, I know the statement that it is either a state or a place to be true also, if any one should make that statement. Therefore when I am considering the truth of statements with a view to stating which of them are true, I can pass from the assertion that 'Heaven is a state' is true to the assertion that 'Heaven is either a state or a place' is true, and not vice-versa. But I am not often thus engaged; I might be, if I was marking examination papers, and had to look up the answers to some of the questions; having found that there was at least enough authority for the statement that Homer was born in Smyrna for me to accept

that answer to the question where he was born, I might accept also the answer that he was born in Smyrna or Chios. But to say that is a very different thing from saying that if I know Homer was a poet I can infer that he was either a poet or a haberdasher.

Much that Mr. Johnson says in his endeavours to remove the 'paradoxes of implication' seems to me, if I may say so, very good sense. Certainly a man who says 'If that boy comes back, I'll eat my head,' because he is convinced that the boy will not come back, cannot prove the truth of his conviction by agreeing that since he will not eat his head, the boy will not come back; and certainly we ought to ask ourselves in what situations such phrases are used, and what is meant by them. But I should like to ask those questions about the 'equivalent forms of composite functions'. When does a man use the 'implicative form,' if p then q? Not when he wants to express his belief that either p is false or q is true, but when he wants to express his belief that there is a connexion between the facts alleged in p and those alleged in q. 'If he do but touch the hills, they shall smoke': why? because of the power of the Almighty. Is the meaning of this form of statement really the same as what I have when I say 'If Fox was a Tory, the square of 7 is 49'?

Mr. Johnson's solution seems to me to do no more than explain why we sometimes use the 'implicative form' without meaning to assert an implication. 'If that boy comes back, I'll eat my head' is a way of emphasising the conviction that the boy is gone for good. 'If Boswell was a fool, he wrote a work that will live longer than that of many a wiser man' is a way of emphasising the excellence of his work. A Greek would have said ἐάν for *if* in the first case, and εἰ καί in the second; and the form of words does not really mean the same in each, nor in either what it means commonly. What needs explanation is not this, but the paradox involved in maintaining that 'Fox was a Tory' implies 'The square of 7 is 49'. The possibility of using the word *if* in the sense of *whether or not* does not show that 'Whether or not Fox was a Tory, the square of 7 is 49' indicates the same relation between the two facts referred to as is indicated by the statement 'If an animal is intelligent, it can choose'. But it is not enough merely to point this out. For this is too obvious to explain why able men should have maintained the equivalence of the 'forms of composite function'.

Mr. Johnson would perhaps refuse to admit as an implication the proposition 'If an animal is intelligent, it can choose' since it is not in form a statement that one *pro-*

position implies another. True that at I. 157 he writes 'If the American harvest is bad, the European prices of corn are high' 'is properly enough denominated hypothetical, because the central or principal relation asserted is that of implication'. But a little later he says that 'furthermore such relations as contemporaneity and causality may be taken as implicitly asserted in such a proposition'. He may mean therefore that the principal relation asserted is one of implication between the *propositions* 'The American harvest is bad' and 'The European prices of corn are high,' and that only secondarily is a causal or temporal relation asserted between the *facts*, bad harvests in America and high prices of corn in Europe. To me, the position assumed in such a defence seems precisely the error from which the paradoxes of implication spring. Neither would it be consistent with Mr. Johnson's choice of examples in his effort to remove these paradoxes. There is no difference in form between 'If you jump over that hedge, I'll give you a thousand pounds' and 'If you jump out of that window, you'll be killed'.

Another reason might be offered for refusing to admit as implicative the proposition 'If an animal is intelligent, it can choose'. It is not a composite function of *single* (*i.e.*, singular) propositions. But we may take instead the instance 'If my dog is intelligent, it can choose,' and satisfy this scruple.

Now a man who made this assertion would think that intelligence made choice possible to its possessor, but doubt whether his dog was intelligent. And that is what he would mean by the 'implicative form' of his statement. Thinking that, he would also think that intelligence in his dog and inability to choose were not compatible; and he might express this by saying 'Either my dog is not intelligent, or it can choose.' But to think that intelligence makes choice possible to his dog is not the same as to think that intelligence and inability to choose are incompatible. Red and green are incompatible in a surface, but not being green is not therefore related to being red as the power to choose is thought to be related to intelligence; for blue and green are equally incompatible, and not being green cannot be so related to both blue and red as the power to choose is thought to be related to intelligence, since blue and red are incompatible themselves, and therefore cannot be that in a surface which makes it not green. Where then a statement of implicative form expresses a belief in some connexion of factors in the real, the statement of alternative form which may be inferred from it is not equivalent; although its truth is grounded in the truth of the other.

But where we abstract from any consideration how elements in the real are connected, and intend by a statement of alternative form merely to assert that one or other of two statements is true, then there is no difference between the meaning of this assertion, and that of the assertion that if either is false, the other is true. Thus 'Either the statement that Fox was a Tory or the statement that the square of 7 is 49, is true' is (at any rate in Mr. Johnson's view, that the 'alternatives' are not to be taken as mutually exclusive) equivalent to 'If the statement that Fox was a Tory is false, the statement that the square of 7 is 49 is true; and if the statement that the square of 7 is 49 is false, the statement that Fox was a Tory is true.' The alternative form is therefore equivalent to the implicative and counter-implicative together; or, if we hold that 'either . . . or' excludes 'both,' to them and the disjunctive 'not-both' together: with the proviso nevertheless that the act of realising these to be true together is not just the three acts of realising each to be true severally. But if these three are merely equivalent to one another (and then contraposition is not inference) it is equivalent to any one of them singly. And if this is all that is meant by the implicative form, then the paradoxes of implication disappear. For take any false statement, such as 'Fox was a Tory,' and any other statement you please; and it is true that either the statement 'Fox was a Tory' is false or the other statement is true (or false). And take any other statement you please, and the true statement 'Fox was a Whig'; and it is true that either the other statement is true (or false) or the statement 'Fox was a Whig' is true. A man therefore knowing the truth of these statements of alternative form—'Either Fox was not a Tory, or x is y,' 'Either x is y, or Fox was a Whig'—but not in the least knowing whether Fox was a Tory, nor whether x is y, may equally say 'If Fox was a Tory, x is y' and 'If x is not y, Fox was a Whig'. To establish the antecedent would carry the consequent; and in that sense the antecedent implies the consequent. Thus if the propositions of different forms alleged to be equivalent are propositions about the truth and falsity of other propositions, and nothing more, the table of equivalences may stand. But only so can it stand; and propositions of these forms are seldom merely that. For propositions about the truth or falsity of other propositions presuppose in those others an expression of opinion or knowledge about the real. Whenever that opinion or knowledge is in the mind of one who asserts a proposition of the 'implicative form' *If p, then q* (or *p implies q*), he means more than barely to assert that of the two propositions 'p is false' and 'q is true,' one is true

And so long as he means more than that, what he means is not a relation holding between any false proposition and all other propositions, or between all other and any true proposition. The paradoxes of implication therefore are only not fatal to the doctrine of implication, if in that doctrine the propositions of implicative or other equivalent form are barely propositions about the truth or falsity of other propositions.

My excuse for discussing this matter at such length is that Mr. Johnson seems to me to have been led by error here into other and serious error about the nature of inference. The importance which he attaches in the theory of inference to the use of the 'implicative principle' seems to me altogether exaggerated. It is of course true that from the compound proposition 'x and "x implies y"' we may formally infer 'x' (II. 11). But it is not through realising the validity of such forms as these that knowledge advances. So long as we realise the validity of particular arguments of these forms when we use them (and who does not?), we need never consider the forms *in abstracto*. It is the connexions which are not 'formal,' the realisation of which advances knowledge. That 'x and "x implies y"' implies 'y' is true (barring the question whether that is the best way of stating the truth), whatever propositions x and y stand for; that x implies y is not true whatever propositions x and y stand for. Yet a statement of the form 'x implies y' may be, even if it is not always, an inference; and knowledge is advanced precisely when it is so. Mr. Johnson relegates the consideration of such cases to his chapters on induction; but though I am happy to find myself agreeing with many things there said, at a crucial point fundamental to the present issue he appears to me to be mistaken. I refer to the chapter (II, Ch. IX) on 'Summary (including Geometrical) Induction'; and also to the account of algebraical induction.

He distinguishes in II, Ch. IX, two types of Summary Induction, which nevertheless appear to be regarded as species of one genus. The first is what is commonly called Perfect Induction. The account of this is not germane to my present problem; but it is so surprising, as well perhaps as illustrative of that tendency not to look beyond an apparently identical form of speech to differences in what is meant, which we have elsewhere encountered, that I venture to diverge to it for a moment. Mr. Johnson takes what, so far as I know, is a new view of the character of a perfect induction; he thinks that it is formally a syllogism in Barbara with an enumerative middle term.

Here is his example (p. 197):

"*Major Premiss:* 'Sense and Sensibility' and 'Pride and Prejudice' and 'Northanger Abbey' and 'Mansfield Park' and 'Emma' and 'Persuasion' deal with the English upper middle classes.

"*Minor Premiss:* Every novel of Jane Austen is identical either with 'Sense and Sensibility' or with 'Pride and Prejudice' or with 'Northanger Abbey' or with 'Mansfield Park' or with 'Emma' or with 'Persuasion'.

"*Conclusion:* ∴ Every novel of Jane Austen deals with the English upper middle classes".

'Here,' says Mr. Johnson, 'the enumeration standing as subject in the major premiss is the same as the enumeration standing as predicate in the minor premiss.' It is true that the same items are enumerated, but an enumeration of items as a collection does not seem the same with an enumeration of them as alternatives, and I should have charged this syllogism with *quaternio terminorum.* 'But,' proceeds Mr. Johnson, 'in the former reference is made to every one of the collection, in the latter to some one or other. This precisely corresponds to the characteristic of first figure syllogism; namely that the middle term is distributed as subject of the major and undistributed as predicate of the minor.' This is surely a complete misrepresentation of what is meant by distribution of terms. Let us take a real first figure syllogism. 'Every novel worth reading deals with the English upper middle classes: Every novel of Jane Austen is worth reading ∴ Every novel of Jane Austen deals with the English upper middle classes.' Here, if the proof is not to be circular, the major premise must mean to assert a connexion between dealing with the English upper middle classes and being worth reading; Mr. Johnson's major premise does not assert a connexion of 'adjectives'. And as minor term I could substitute 'Emma' for 'Every novel of Jane Austen' without reducing the minor premise to nonsense; but not in Mr. Johnson's argument. The middle term is undistributed in the minor premise of a syllogism in Barbara because the premise ascribes to the singular subject which is minor term (such as 'Emma') or to each singular included in it (such as 'Every novel of Jane Austen') a certain character, and not an enumeration of the instances of that character. But it is no character of a novel to be either 'Emma' or 'Persuasion,' etc. Grass is green, and green is a character of grass; it is not another character of grass to be green or red, and another to be green or blue, and another to be green or irresponsible, and so forth *ad infinitum.*

The other type of inference called summary induction is

that 'in which the conclusion applies to an infinite number of cases which are non-enumerable'. 'Its conclusion cannot be reached from an examination of one or a few instances,' yet 'does not extend beyond the range of the examined instances'. This is the account which Mr. Johnson gives of our procedure when we apprehend in the consideration of a geometrical figure that some connexion of properties holds for all figures of a certain sort: *e.g.*, that 'two straight lines terminating at the same point cannot intersect at any other point'. This axiom, he says, 'can be established only by means of imagery and not by mere perception; for the compass over which the axiom holds is beyond the range of actual perception. For in the first place it is only through imagery that we can represent a line starting from a certain point and extending indefinitely in a certain direction, and, in the second place, we cannot represent in perception the infinite number of different inclinations or angles that a revolving straight line may make with a given fixed straight line. We may, however, by a rapid act of ocular movement represent a line revolving through 360° from any one direction to which it returns. In this imaginative representation, the entire range of variation, covering an infinite number of values, can be exhaustively visualised because of the continuity that characterises the movement. It is only in such a process of imagery is possible that we can say that the axiom in its universality presents to us a self-evident truth. It is therefore this process of summary induction that is employed to establish geometrical axioms.'

This passage may be compared with Mill's appeal to experiment with imaginary lines in support of the same conclusion,[1] and like that, seems to me the last refuge of the desperate. The criticisms that suggest themselves are almost too numerous to set down. The compass over which the axiom holds is as much beyond the range of actual imaging as of actual perception, for we cannot image every length of line; no actual image of a line extends indefinitely, any more than does a line perceived; it is not necessary to rotate the eye in order to appreciate that the angle at which one of two intersecting straight lines is inclined to the other has nothing to do with their incapacity to intersect again, any more than I need rotate my eyes in order to understand that the proof that the angle in a semicircle is a right angle is independent of the size or place of the semicircle; if it were necessary, my appreciation of the fact could only concern straight lines

[1] *System of Logic*, II. v. 5.

at angles included within the arc of rotation, and I cannot rotate my eyes through 360°; the range of variation need not be exhaustively visualised, even if I could so rotate them, for it is one thing to rotate the eye and another to see or imagine a line rotating; the continuity of the movement of a line, whether seen or imagined, is not an object of perception or imagination but of understanding; even were it otherwise, the positions are no more all perceived, than are all the points that may be found in a line, and hence the conclusion is not a summary of individual observations; while, if it were, it would not present to us a self-evident truth. Such are the criticisms to which Mr. Johnson's doctrine is exposed, and all because he thinks that the axiom, though not to be established by perception, can be established by imagery. Unless we know it through thinking, we do not know it all.

Arguments of the form to which the name mathematical or algebraical induction is commonly given, such as that by which it is shown that the sum of the first n odd numbers $= n^2$, for all values of n, are brought by Mr. Johnson under the title of functional deduction. That they are not inductive but demonstrative I fully allow, if the name inductive is to be given to the arguments by which the inductive sciences establish their generalisations. But here, too, Mr. Johnson seems to me to miss the character of the crucial act of thought. He gives the general form of the argument as follows (II. 134):

> "*Implicative Premiss:* 'The proposition $f(n)$ would imply the proposition $f(n+1)$' for every finite integer n."
>
> "*Categorical Premiss:* '$f(1)$' holds."
>
> "*Conclusion:* Therefore '$f(n)$' holds for every finite integer n."

Now no one would have any difficulty over this argument. What the advance of mathematical knowledge depends on is the power to see and show that the 'implicative premiss' is true; and in some cases the categorical premiss may also present difficulty. In the proof of the formula for the sum of the first n odd numbers, it is necessary to know that the $(n-1)$th odd number is $2n-3$, whatever the value of n; and however easy it may be to know it, it is a universal proposition whose truth can only be known by thinking.

I come back therefore to my complaint, that Mr. Johnson thinks about relations between the truth or falsity of one proposition and the truth or falsity of another, when he should be thinking of relations between factors in the real; and supposes that the propositions important in inference and as subject matter of logical reflexion are statements about the first, when they are really statements about the second. Logical

necessity is not the necessity to say one thing if you say another, for no such necessity exists[1]; nor yet the necessity to think one thing if you think another, for if this were all it is, what would logically necessary thinking have to do with the nature of the reality which we desire to know? But it is the necessity recognised by him who thinks with which one element in the real is connected with another. And many paradoxes of implication will disturb us, if this is forgotten.

(17) The passage where a proposition is said to depend sometimes for its character upon the assertion of another proposition I have already cited from I. 40: '(i) a false proposition (*e.g.*, not-p when p has been asserted) implies *any* proposition (*e.g.*, q): (ii) a true proposition (*e.g.*, q, when q has been asserted) is implied by *any* proposition (*e.g.*, p)'. I should have thought 'is true' should be read for 'has been asserted'. As it stands, the test seems to me inconsistent with what is said about the relation of assertive attitudes to propositions; for if Mr. Johnson replies that he holds truth and falsehood to belong to propositions only so far as they are asserted, then not-p is false in so far as it, and not in so far as p, has been asserted. The point is not important. I call attention to it only because the difficulty of supposing the character of one proposition to depend on the assertion of another is somewhat similar to the difficulty of supposing a proposition to be something concerned with the truth or falsity of other propositions: a supposition which I have ventured to hold that Mr. Johnson in places inadvertently makes.

(18) (19). That a proposition is an *assertum* is perhaps not so much an account of its nature as of its relation to a thinker. Thus Mr. Johnson writes (I. 4): 'In order to mark the important distinction, and at the same time the close connexion, between the proposition and the act of assertion, I propose to take the term "assertum" as a synonym for "proposition" when such terminology may seem convenient. Thus, the assertum will coincide, not exactly with what *has been* asserted, but with what is in its nature assertible.' With this passage should be compared another on page 7: To 'assume' and to 'presume' are words denoting 'attitudes between which some subtle distinction may be understood'; and we might speak of the object of such attitudes as an assumption or a presumption accordingly. 'Unfortunately substantival words such as these are apt to suggest a difference in nature between

[1] I borrow this observation from Prof. J. A. Smith, who once made it to me in criticism of some remarks of mine in MIND, N.S., vol. xix, 1910, p. 545.

that which is in the one case presumed and in the other assumed; but this suggestion must be rejected, and it must be maintained on the contrary that the content of a proposition preserves its identity unmodified, independently of all variations of assertive attitude and of personal and temporal reference.'

I doubt whether the meaning of all this received sufficient consideration. The passages are written under the influence of the theory that a proposition is a *Zwischending;* but they do little to elucidate it. It is unfortunate to use the word 'assertum' as a synonym for 'proposition' in order to show that a proposition is something whose nature is independent of being asserted. We might call that which is in its nature drinkable a drink, but we should never call it a drunk. On the other hand, to call a proposition an assertible would in no way describe what it is; just as it in no way describes what a solid is, to say that it is impenetrable. What we wish in the second case to know is the nature of that which cannot be penetrated; and in the first, the nature of that towards which the assertive attitude may be adopted: which when in this relation to a mind is assertum, and when not, assertible.

Where an assertion is true, the *Zwischending* is not required; the real is sufficient object of thought; but thought seems equally to have an object when erroneous. The *Zwischending*, however, once introduced, cannot be restricted to erroneous assertions. Hence 'the truth of a judgment (expressed in a proposition) may be said to mean that the proposition is in accordance with a certain fact, while any proposition whose falsity would necessarily follow from the truth of the former is in discordance with that fact' (I. 16). I pass over for the moment the point that for a judgment to be 'expressed in' a proposition is not the same as to be an 'attitude' towards it. I want to notice that the proposition, or assertible, on this view, even when my assertion is an act of knowledge, is not fact, but in accordance with fact. So I can assert the proposition, and I can assert its accordance with fact; must I not also therefore assert fact? But if so, in the assertion of fact the proposition as a *Zwischending* would be superfluous.

Is not the reality what is in its nature assertible? No doubt assertions of what differ, themselves differ not only in being of what differ but in their own nature. What preserves its identity unmodified throughout my different attitudes is the real; but my 'attitudes' in assuming, presuming, asserting or what not, are different. That does not prevent them from being in their nature partially the same.

I will try to explain what I mean. I do not pretend to remove all the difficulties which the doctrine of the *Zwischending* attempts to meet. I would merely ask whether what follows may not be more on the way towards meeting them, than that doctrine.

We often distinguish the form and matter of thought; but we misuse that distinction if we think the matter to be the object. Whether in the last resort thought and its object are not somehow identical, I will not discuss; but even so, the distinction of form and matter would not be the distinction of thought and its object, but would fall within thought. For in the act of knowing that all quantity is continuous, and in the act of knowing that all cruelty is evil, the objects of my knowledge are different, and the knowings are different also. The differences in the knowing are correlative with, but are not, the differences in the known. An analogy may be of use here, though, since there is nothing else of the same nature with thought, we must not expect analogies from what is not thought to exhibit its nature. A good rider adapts his movements to those of his horse. Each act in which he does so is a system of correlated movements of the different parts of his body, and so far his acts have the same form; but they differ materially, in that this general character of his acts is variously particularised as the movements of his horse require. The form of movement on his part is the same; the matter is not the movements of his horse, but the determinate characters of his movements whose form is common. So the matter of thought is the determinate character of an act of thought, whose form is the same with what is differently determined in other acts of thought.

If this be so, what Mr. Johnson says of the relation of proposition to assertion perhaps misses a truth after which he was feeling. We have seen how often in the *Logic* a proposition is a statement. Now a statement is not *flatus vocis*, nor printed words, any more than music is a score. Music exists in being played, or inwardly heard; and statements exist in being thought, not merely uttered; for which reason a lie is not really a statement on the part of the liar. The statements therefore given as examples in a work on logic are examples only so far as the writer or reader enacts the thinking which they express; and in that sense, there is as close a connexion as Mr. Johnson maintains between a proposition and the act of assertion. But this is the relation between thinking and statement. Mr. Johnson seems to have confused it with a relation between the thought expressed in words, and some *Zwischending*. That is why a judgment

is said to be expressed in a proposition in the same sentence in which the proposition and not the judgment is said to be in accordance with a certain fact. When a proposition is said to express a judgment, it is thought of otherwise than when it is said to accord with a fact.

The proposition then is such only as expressing thought; it means, but nothing means which is not used to mean; words mean, because the speaker uses, or because the reader imagines himself or another to be using them. And otherwise, we could not distinguish in a proposition form and matter. That propositions have the same form—singular, affirmative, or what not—is not that sentences have the same anatomy. Whatever distinction of form and matter in a proposition is of interest to logic is but the distinction of form and matter in thought. And if that is to be drawn within the act of thought, then what Mr. Johnson calls the content of the proposition, if it is not the reality, must be the matter of thought, in the sense just explained.

Those words, 'content of the proposition' in the context where they stand on I. 7, are puzzling; for Mr. Johnson is in course of maintaining that a 'proposition' may be the same, though our assertive attitudes to it may differ. Why does he suddenly speak of the 'content of a proposition' as the same? does he distinguish between the proposition and its content? has the proposition form as well, and may the form change while the content 'preserves its identity unmodified'? I cannot help thinking that when he wrote 'the content of a proposition' he was thinking of what might be called the matter of an act of thought; though, if so, we have a third meaning for 'proposition' in the same context. For if it is true that in an act of thought we may distinguish, though we cannot separate, what it has in common with other acts of thought from the determinate character which belongs to it in virtue of (yet without being) what is thought of, then not only may different assertions be of the same form, since all are assertions, while materially different, but an assertion and a supposition of the same may be acts of thought materially the same, while differing in form. Mr. Johnson's account of the relation of a determinable to its determinations, and what he says of the impossibility of separating factors which can yet be distinguished in the unity of (say) a musical note, would seem to justify the hope that he would not exclude such an analysis on principle, even if he would not accept it as correct in this application.

(20) There remains the statement that a proposition is a *possibile*. This doctrine is introduced in the course of a

discussion (I. 216 *seq.*) in which Mr. Johnson describes how 'relational propositions of more complicated forms,' such as '*A* gives *X* to *B*,' may be altered in character, and reduced from being triadic to being diadic (*sic*), or from that to being monadic, by the use of hyphens, or by other verbal transformations. Thus '*A* gives *X* to *B*' is triadic; '*A* gives-*X* to *B*' is dyadic; '*A* is giver-of-*X*-to-*B*' is monadic.

I am bound to say that if a proposition is that towards which I may adopt various assertive attitudes, and analysable into entities substantival and adjectival, I fail to see how I can transform it by hyphening words, or otherwise altering a sentence. Surely what I think of, whichever of these statements I write or utter, is the same; though, since it is complex, I may take different distinctions within it. But I will not pursue this consideration. Mr. Johnson says that in the analysis of that which contains 'a plurality of radically different relational components' we may 'take as a bracketed constituent a complex containing all the components of a complete proposition': in the example '*A* prevents *B* from hurting *C*' we may thus take '*B*'s hurting *C*'. This he calls a proposition; and the proposition '*A* prevents *B* from hurting *C*' predicates of the person *A* the relation 'preventing' towards this component proposition. The proposition '*B*'s hurting *C*' 'in this aspect may be called a *possibile*'.

Now I find it very difficult to give the same meaning to the word 'proposition' when I am told (1) that in saying ''*B* hurts *C*' is doubtful,' I assert the adjective doubtful of a proposition, and (2) that in saying '*A* prevents *B* from hurting *C*' I assert of *A* the relation 'preventing' towards the same proposition. If the proposition is a statement, that is not what I assert *A* to prevent; if it is not, I do not know what same thing it is in both cases. My question, however, is—what does Mr. Johnson mean by calling it a *possibile*?

I doubt whether this question can be properly answered from the three volumes of the *Logic* so far published. The fourth, which is to deal with probability or problematic induction, may be expected to tell us more. Two pages later (I. 219) he speaks of such relations 'in which a thinker may stand to a *possibile* or *assertibile*'; and those words might suggest that *possibile* means only *quod potest asseri*: in which case it would be a mere synonym for *assertibile*. But all propositions are that, whereas a proposition may be called a *possibile* in its aspect as a bracketed constituent complex of another proposition and 'containing all the components of a complete proposition'. This interpretation must therefore

be rejected, though slightly supported by II. 2, where implication is called potential inference, and said to have the same relation to inference as proposition has to assertion. Its rejection is further justified by I. 218, where we are told, in the very context where a proposition is said under a certain aspect to be a *possibile*, that 'the causal proposition as such, properly speaking, always relates one *possibile* to another either by way of production or of prevention'.

I guess that in Mr. Johnson's view being possible and being probable are modes of being in what is, and comparable in this regard with being tired or red or puzzled. We are told at II. 38, that "by means of the concrete implication that 'every examined case of an acquired characteristic being non-transmitted would imply, with a certain degree of probability, that no acquired characteristic is transmissible,' conjoined with the certified fact that 'in all examined cases acquired characteristics are non-transmitted,' we infer the conclusion that 'with a certain degree of probability no acquired characteristic is transmissible'". Here the wording expressly attaches degrees of probability not to our thinking but to the relation between similar characteristics in parents and offspring; but that it should attach to this relation, or to the implicative relation as previously described, whereto it is also said in this passage to attach, is to me as inconceivable as that a race of men should be discovered with probably purple skins. We shall doubtless be told more of what Mr. Johnson thinks about this in his forthcoming volume, from which I shall be very willing to learn that I have misinterpreted the above passage; but I am certainly not enlightened in any way by being told that a proposition is, under any aspect, a *possibile*.

I have now finished the attempt to justify my enumeration of what is told us in the *Logic* about the nature of a proposition. If I have succeeded, I think it must be admitted that there is no clear or consistent doctrine to be found there. I hope that Mr. Johnson, should he read this paper, will believe that I should not have discussed the question at such length if I did not think that a work by him on such a scale, embodying the fruit of so much thought, and propounding so many novelties, demanded the most careful examination. I may be asked to summarise the conclusions to which it has led me; but I find that difficult just because I find no consistent doctrine. But the view or combination of views that seems to me to bulk most largely or recur most frequently is this—that logic deals with propositions: propositions are statements in which men express their thought: those state-

ments however are entities in which we can discover by analysis substantival and adjectival factors that in their union characterise the real: nevertheless inference proceeds mainly by way of logical relations between propositions, not of real relations between facts: and therefore to devise suitable symbols for statements, and operate with them according to rules based on these logical relations, will help to show the naked skeleton of reasoning. These positions are not all reconcilable with one another, and therefore are not all thought of together. But something like that seems to me to be what is in the main expounded. And if there is one thing that I should like to urge more strongly than another in opposition, it is this—that logic is the study of thinking, and *imprimis* of that thinking in which we know: that there is no knowledge, unless it is of what is real: that inference is an advance in knowledge through thinking and not through fresh perceiving: and that so to advance is to apprehend that some feature in the real already known is connected in the necessity of things (which it is idle to call a logical necessity) with some other that we come to know in this advance. If this be so, mathematics is a special science in the development of which such advance in knowledge is at work, but it is not logic; and relations between propositions are but of derivative and secondary importance.

III.—AN ELEMENTARY SYMBOLISM FOR LOGIC.

By L. J. Russell.

The object of this paper is to suggest a symbolism for Formal Logic which will mediate between the traditional formal logic and the new symbolic logic, and will enable the logician who does not care for the "algebra" of logic, and who is repelled by the look of the pages of Whitehead and Russell, to solve some of the problems, and appreciate some of the points, which the symbolic logicians have dealt with in their work. Since this is its object, I shall not aim at completely systematic exposition, or at completeness. The symbolism adopted can be regarded as a modification of that used by Whitehead and Russell. The propositions first symbolised are, for the sake of exposition, those familiar in traditional formal logic, though the exposition is not restricted to such. Many propositions are, in this paper, accepted as self-evident which are proved by the symbolic logicians. The object of the paper is simply to endeavour to help in breaking down a widespread suspicion of symbolism that exists among many philosophers.

1. *Hypothetical Propositions, e.g.:* If A is B, then C is D. Symbolise this by If a then b, where "a" is the constituent of the hypothetical represented by "A is B," and "b" that represented by "C is D". Now symbolise "If a then b," by

$$a \mid b.$$

This is simply the usual "$a \supset b$" (a implies b), with the curve straightened; but it enables us to write our propositions one under the other instead of writing them along a horizontal line: with useful results.

2. From "If a then b, and If b then c," we can infer "If a then c". Using the horizontal bar to express the same relation as is expressed by the vertical bar, this can be written:

$$\frac{\begin{array}{c|c} a & b \\ b & c \end{array}}{a \mid c}$$

We have thus a simple way of expressing interrelations between propositions without asserting the propositions themselves. For in this case all we assert is that from $a \mid b$ and $b \mid c$, $a \mid c$ follows. We do not assert $a \mid b$ or $b \mid c$ or $a \mid c$. If we wish to assert $a \mid b$ and $b \mid c$ and the relation of these to $a \mid c$ we can do so by the simple method of inserting $\therefore$ below the line:—

$$\begin{array}{rl|l} & a & b \\ & b & c \\ \hline \therefore & a & c \end{array}$$

We shall speak of the left and the right sides of the *vertical* line as the "antecedent side of the line" and the "consequent side of the line"; and of the upper and lower sides of the *horizontal* line as the "premisses" and the "conclusion".

3. *Elementary Rule for Formal Implications.*—If we call "a," "b," and "c" propositional elements, we have the rule that propositional elements on opposite sides of the line in the premisses cancel out, and the remaining elements combine into the conclusion on their own sides.

It is clear that this result is not restricted to the case where we have two premisses. For example we have:

$$\begin{array}{l|l} a & b \\ b & c \\ c & d \\ d & e \\ \hline a & e \end{array}$$

and the result is independent of the order of the premisses.

4. *Assertions.*—From "If a then b, But a," we can infer, "b." We can get a symbolism which enables us to use in this case the same rule as in § 2. For if we symbolise the assertion of a (*i.e.*, "a is true") by

$$\vdash \mid a$$

the argument becomes

$$\begin{array}{l|l} a & b \\ \vdash & a \\ \hline \vdash & b \end{array}$$

the sign of assertion being treated in the same way as a propositional element. Note that this does not assert a. It simply asserts that from the assertion of $a \mid b$ and of a the assertion of b will follow. The sign $\vdash$ is that used by Whitehead and Russell in their symbolism.

5. Let us symbolise the contradictory of a by $\bar{a}$, that of $\bar{a}$

being a. From "If a then b" we can infer "If not b then not a". This gives us

$$\frac{a \mid b}{\bar{b} \mid \bar{a}}$$

In the same way

$$\frac{a \mid \bar{b}}{b \mid \bar{a}} \qquad \frac{\bar{a} \mid b}{\bar{b} \mid a} \qquad \frac{\bar{a} \mid \bar{b}}{b \mid a}$$

Rule: Elements change sign on being transferred from one side of the line in the premisses to the other side of the line in the conclusion.

6. Suppose we have "If a then b, and If c then not b". What conclusion can we draw? Clearly the second hypothetical can be expressed, "If b then not c"; and thus we have "If a then b," and "If b then not c," from which the conclusion is "If a then not c".

In symbols:

$$\begin{array}{cccc} a \mid \bar{b} & \rightarrow & a \mid b & \\ c \mid \bar{b} & \rightarrow & b \mid \bar{c} & \text{using the rule in § 5.} \\ \hline a \mid \bar{c} & \leftarrow & a \mid \bar{c} & \text{using the rule in § 2.} \end{array}$$

Or we have again

$$\begin{array}{cccc} a \mid b & \rightarrow & \bar{b} \mid \bar{a} & \text{using § 5.} \\ c \mid \bar{b} & \rightarrow & c \mid \bar{b} & \\ \hline c \mid \bar{a} & \leftarrow & c \mid \bar{a} & \text{using § 2.} \end{array}$$

Again, "If a then b, and If not a then c," gives "If not b then c".

$$\begin{array}{cccc} a \mid b & \rightarrow & \bar{b} \mid \bar{a} & \text{using § 5.} \\ \bar{a} \mid c & \rightarrow & \bar{a} \mid c & \\ \hline \bar{b} \mid c & \leftarrow & \bar{b} \mid c & \text{using § 2.} \end{array}$$

or

$\bar{c} \mid b$: "If not c then b".

Rule: Propositional elements with opposite signs in the premisses cancel out if they are on the same side of the line, while the remaining elements come down into the conclusion, the one which changes side being changed in sign.

7. "If a then b; but not b: gives not a".

$$\frac{a \mid \bar{b}}{\vdash \mid \bar{b}}$$
$$\vdash \mid \bar{a}$$

shows the same rule.

In § 15 we shall see that the denial of a ("a is false") can be symbolised by

$$a \mid \overline{\vdash}$$

the sign $\overline{\vdash}$ always going on the consequent side of the line, just as the sign $\vdash$ always goes on the antecedent side: thus the above could have given us

$$\begin{array}{c|c} a & b \\ \vdash & \bar{b} \\ \hline a & \overline{\vdash} \end{array}$$

preserving in its entirety the rule of § 6.

8. If more than two hypotheticals give a single conclusion, the rules are the same.

E.g.,		
	If a then b.	$a \mid b$
	If not d, then not c.	$\bar{d} \mid \bar{c}$
	If b, then not e.	$b \mid \bar{e}$
	If not e, then c.	$\bar{e} \mid c$
	If a, then d.	$a \mid d$

The b's and the $\bar{e}$'s on opposite sides, and the c and $\bar{c}$ on the same side, cancel out, leaving a and $\bar{d}$ on the antecedent side of the premisses. One of these has to come to the consequent side of the conclusion, changing sign as it does so. Many of Carroll's elaborate problems in his "Symbolic Logic" follow at once from this.

9. "*And*," *and* "*or*".

Symbolise "a and b," by $a \,.\, b$
"a or b," by $a \vee b$.

If a and b, then c: $a \,.\, b \mid c$
If a, then b and c: $a \mid b \,.\, c$
If a, then b or c : $a \mid b \vee c$
If a or b, then c : $a \vee b \mid c$

There is no special logical virtue (or vice) in the dot or the $\vee$: but they involve less writing than "and" and "or".

There is clearly a difference between the antecedent and the consequent side, in respect to "and" and "or". From "a and b" we shall allow the inference "a or b"; it is clear that the converse cannot follow on any interpretation of "or". (See further § 11.)

Thus we have $a \,.\, b \mid a \vee b$
but not $a \vee b \mid a \,.\, b$

We shall assume without comment $a \vee b \mid b \vee a$
and $a \,.\, b \mid b \,.\, a$

Again, "If a, then b and c" is two propositions: "If a, then b; and If a then c". So with "If a or b, then c". This is the same as "If a then c, and If b then c". But "If a and b, then c," and "If a, then b or c," are each only one proposition.

Thus:

a	$b \,.\, c$
a	b
a	c

$a \vee b$	c
a	c
b	c

but $a \,.\, b \mid c$ and $a \mid b \vee c$ cannot be broken up.

Again, $a \mid b$ and $a \mid c$ give $a \mid b \,.\, c$

i.e.,

a	b
a	c
a	$b \,.\, c$

We have also

a	b
a	c
a	$b \vee c$

So too $a \mid c$ and $b \mid c$ give $a \vee b \mid c$

i.e.,

a	c
b	c
$a \vee b$	c

We have also

a	c
b	c
$a \,.\, b$	c

Similarly with assertions $\vdash \mid a \,.\, b$ allows $\vdash \mid a$ and $\vdash \mid b$.

$\vdash$	$a \,.\, b$
$\vdash$	a
$\vdash$	b

but not so with $\vdash \mid a \vee b$.

Again, we have

$\vdash$	a
$\vdash$	b
$\vdash$	$a \,.\, b$

$\vdash$	a
$\vdash$	b
$\vdash$	$a \vee b$

10.

a	b
c	b
$\bar{b}$	$\bar{a} \,.\, \bar{c}$

will be clear from §§ 5 and 9.

11. We have used "or" to couple alternatives which are not necessarily exclusive. For formal purposes this use of "or" is the more convenient: if we want to express the fact that the alternatives are exclusive we can do so by a second statement. Thus "either a or b" will be symbolised $\mid a \vee b$; and it means simply the assertion of at least one of the pair a and b, *i.e.*, "at least one of the propositions $\vdash \mid a$, $\vdash \mid b$". If in addition only one of the propositions can be true, we can express this by adding the proposition $a \mid \bar{b}$.

Thus: Either a or b is true, possibly both: $\vdash \mid a \vee b$.

Either a or b is true, not both:

$\vdash$	$a \vee b$
a	$\bar{b}$

Since we are only concerned with a symbolism, we need not decide between the various philosophical interpretations of the propositional forms: all we need to do is to adopt the principle that we want our symbolism to be able to express all the interpretations. We want in every case to express in the first instance the *minimum* that any form conveys. Thus in "Some S is P," Some = "some at least" expresses less than some = "some only"; in "a or b," "perhaps both" expresses less than "not both"; in "If a then b" the minimum meaning does not involve "If b then a"; in "All A is B," the minimum meaning does not involve the assertion that there are A's. By constantly adopting the minimum meaning we obtain a symbolism which will be able to express the maximum meaning whenever that is meant; and the symbolism can as a result be used whatever interpretation we give to the propositional forms in philosophical theory.

It will be seen later that we shall give to "Some S is P" as a minimum the meaning that there *are* S's which are P's. If anyone can elaborate a symbolism which will express less than this, so much the better.

12. From "Either a or b, but not a," we can conclude b. This gives

$$\begin{array}{l|l} \vdash & a \vee b \\ \vdash & \bar{a} \\ \hline \vdash & b \end{array}$$

Again, "Either a or b, and if a then c: hence either c or b." This gives

$$\begin{array}{l|l} \vdash & a \vee b \\ a & c \\ \hline \vdash & c \vee b \end{array}$$

We have also

$$\begin{array}{l|l} \vdash & b \vee \bar{c} \\ a & c \\ \hline \vdash & b \vee \bar{a} \end{array} \quad \rightarrow \quad \begin{array}{l|l} \vdash & b \vee \bar{c} \\ \bar{c} & \bar{a} \\ \hline \vdash & b \vee \bar{a} \end{array} \quad \text{using § 5.}$$

Again, "Either a or b; but if a then c, and if b then d, hence either c or d." This gives

$$\begin{array}{l|l} \vdash & a \vee b \\ a & c \\ b & d \\ \hline \vdash & c \vee d \end{array}$$

And similarly we have

$$\begin{array}{l|l} \vdash & \bar{c} \vee \bar{d} \\ a & c \\ b & d \\ \hline \vdash & \bar{a} \vee \bar{b} \end{array} \quad \text{by the use of § 5.}$$

Thus the rules are the same as for hypotheticals. When a disjunction is combined with a hypothetical, any element in the disjunction can be replaced by the use of the rules for the combination of hypotheticals.

13. So far we have been simply symbolising the usual forms in the traditional logic. We come next to the most powerful series of transformations, the general rule of which we have put at the beginning of § 14. We shall explain them in this section.

"a or b" means for our symbolism simply "If not a then b". And wherever we can say "If not a then b," we can say "a or b". Thus the two forms are equivalent in meaning. Note that "If I do not hurry I shall lose my train" is quite naturally treated by us in ordinary life as equivalent to "Either I must hurry or I shall lose my train". And so generally, when the antecedent is negative.

Thus $\vdash \mid a \vee b$ is equivalent to $\bar{a} \mid b$, and to $\bar{b} \mid a$. Thus

$$\frac{\vdash \mid a \vee b}{\bar{a} \mid b} \qquad \text{and} \qquad \frac{\bar{a} \mid b}{\vdash \mid a \vee b}$$

These give the definition of "or".

So
$$\frac{a \mid b}{\vdash \mid \bar{a} \vee b}$$

This result is made by Whitehead and Russell a fundamental definition, and introduced right at the start. For it allows the properties of hypothetical propositions to be deduced from the properties of alternatives. This is of great convenience for the purposes of systematic analysis; but for the purposes of the present exposition it seemed better to postpone it to this point.

Note that this result gives

$$\frac{a \mid b \vee c}{\vdash \mid \bar{a} \vee (b \vee c)}$$

which we shall take as equivalent to

$$\vdash \mid \bar{a} \vee b \vee c.$$

We have so far the rule that any element can be transferred from the antecedent side to the consequent side, by changing its sign and coupling it as a disjunctive with the elements already on the consequent side.

The process can be reversed. But on the antecedent side we must couple the elements with "and".

We have already seen that

$$\frac{\vdash \mid a \vee b}{\bar{a} \mid b}$$

It can easily be seen that from "If a, then b or c," we can derive "If a and not b, then c," and "If a and not c, then b".

a	$b \vee c$
$a \,.\, \bar{b}$	c
$a \,.\, \bar{c}$	b

Again, "If a and b, then c" allows us to conclude, "If a, then c, or else not b"; and "If b, then c, or else not a".

$a \,.\, b$	c
a	$c \vee \bar{b}$
b	$c \vee \bar{a}$

14. Thus we have the whole series of transformations:

a	$b \vee c$
$a \,.\, \bar{c}$	b
$a \,.\, \bar{b}$	c
$\bar{b}$	$\bar{a} \vee c$
$\bar{c}$	$\bar{a} \vee b$
$\vdash$	$\bar{a} \vee b \vee c$

$a \,.\, b$	c
a	$\bar{b} \vee c$
b	$\bar{a} \vee c$
$a \,.\, \bar{c}$	$\bar{b}$
$b \,.\, \bar{c}$	$\bar{a}$
$\vdash$	$\bar{a} \vee \bar{b} \vee c$

The general rule being, that where we have "and" on the antecedent side or "or" on the consequent side (or both), any element can be moved from one side to the other by changing sign, "and" becoming "or," and "or" becoming "and". So for instance we have

$a \,.\, b$	c
d	$\bar{c}$
d	$\bar{a} \vee \bar{b}$

As we have seen in § 9 "or" on the antecedent side, and "and" on the consequent side, give us compound propositions, and such transformations as the above are not possible. *E.g.*, we cannot argue

a	$b \,.\, c$
$a \vee \bar{c}$	b

for this would give us the unjustified proposition $\bar{c} \mid b$. The safest plan, where we are combining propositions, is generally to break up compound propositions wherever they occur. Thus "If a or b, then c and d" contains four propositions, and it is safest (and in practical work generally simplest) to write all four separately.

15. *Denial.*—If a is true, then $\bar{a}$ is false, and we can preserve our rules for the transposition of elements by using

$\bar{\vdash}$ on the consequent side of the line as the sign of denial. Thus $\vdash \mid a$ and $\bar{a} \mid \bar{\vdash}$ are equivalent. Thus

$$\frac{a \mid b}{\vdash \mid b \vee \bar{a}}$$ as we have already seen;

and also $a \,.\, \bar{b} \mid \bar{\vdash}$ *i.e.*, the combined assertion of a and $\bar{b}$ gives a false proposition.

Thus the assertion that either a or $\bar{a}$ is true, can be symbolised:

$$\vdash \mid a \vee \bar{a}$$

and this is equivalent to

$$\bar{a} \,.\, a \mid \bar{\vdash},$$ assuming that the denial of $\bar{a}$ is a.

"a is incompatible with b" can be written

$$a \mid \bar{b}$$

or again $\vdash \mid \bar{a} \vee \bar{b}$

or again $a \,.\, b \mid \bar{\vdash}$

Again, "If b is true then b is false" can be written

$$b \mid \bar{b}$$

and we can infer $\vdash \mid \bar{b} \vee \bar{b}$

i.e., $\vdash \mid \bar{b}$ *i.e.*, $\bar{b}$ is true.

Or again, we have

$$\frac{b \mid \bar{b}}{b \,.\, b \mid \bar{\vdash}}$$

i.e., $b \mid \bar{\vdash}$ *i.e.*, b is false.

In the last two results we have assumed (i) that $\bar{b} \vee \bar{b} \mid \bar{b}$ and (ii) that $b \mid b \,.\, b$.

Again, we have

$$\frac{\begin{array}{c|c} a & b \\ a & \bar{b} \end{array}}{\begin{array}{c|c} a & b \,.\, \bar{b} \\ b \,.\, \bar{b} & \bar{\vdash} \\ a & \vdash \end{array}}$$

and since we have — whatever b may be,

Thus "If a then b, and if a then not b: implies not a". (See also § 20.)

16. Note that from $a \mid b$ we can conclude $a \mid a \,.\, b$

Again,

$$\frac{\begin{array}{c|c} a & b \\ b & c \end{array}}{a \mid a \,.\, b \,.\, c}$$

We can preserve all the information we want.

Thus

$$\begin{array}{rl|ll} & a & b & \text{(i)} \\ a\,.\,b & & c & \text{(ii)} \\ \hline & a & c & \text{for (i) implies } a \mid a\,.\,b. \end{array}$$

Our conclusion could be $a \mid a\,.\,b\,.\,c$; or $a \mid b\,.\,c$; etc.

17. *Categoricals.*

(i) Consider All S's are P's.

Let s stand for "x is an S," where x is undetermined. This is not a proposition, but becomes a proposition when a name denoting a definite object is substituted for x. Let p stand for "x is a P".

Interpreting "All S's are P's" as meaning "Whatever is S is P," or more explicitly "If anything is an S it is a P," we can state it "If x is an S then it is a P," whatever x may be. We can symbolise this

$$s \mid_x p$$

where the small letter x beside the line means "for all values of x," or "whatever x may be".

(ii) No S's are P's states that "If anything is an S then it is not a P". It can be symbolised

$$s \mid_x \bar{p}$$

Singular propositions can be treated as universals. *E.g.*, "Socrates is a philosopher". Let s stand for "x is Socrates" and p for "x is a philosopher". Then we have

$$s \mid_x p$$

"If there is any object of which we can assert that it is Socrates, we can assert of that object that it is a philosopher." "x is Socrates implies that x is a philosopher, whatever x may be".

(iii) Some S's are P's asserts that there are objects of which it can be asserted both that they are S's and that they are P's. Let us use the symbol $\exists$ to signify existence (after Whitehead and Russell). Let $\exists_x \mid s\,.\,p$ mean, "there are values of x for which x is an S and x is a P are both true". We shall then find that with this symbolism we can preserve the rules for combination that we have had already for hypotheticals and disjunctives.

There is one point in which the symbol $\exists$ differs from the symbol $\vdash$.

We have

$$\begin{array}{rl|l} \vdash & a & \\ \vdash & b & \\ \hline \vdash & a\,.\,b & \text{and } \textit{vice versa}; \end{array}$$

but we cannot assert

$\exists x$	s	There exist x's for which x is an S
$\exists x$	p	There exist x's for which x is a P
$\exists x$	$s \,.\, p$	There exist x's for which both x is an S and x is a P.

If there exist things of which we can assert that they are S's, and things of which we can assert that they are P's, we cannot conclude that there exist things of which we can make both assertions. In other words $\exists x \mid s \,.\, p$ is not a compound proposition.

(iv) Some S's are not P's gives $\exists x \mid s \,.\, \bar{p}$.

Syllogisms with two universal premisses need no detailed treatment, except in the case of Fig. 3.

E.g., in Fig. 1,

If All M is P	m	$\vdash_x p$
and All S is M	s	$\vdash_x m$
Then All S is P	s	$\vdash_x p$

In Fig. 2,

If All P is M	p	$\vdash_x m$
and No S is M	s	$\vdash_x \bar{m}$
Then No S is P	s	$\vdash_x \bar{p}$

with the same rules as before.

Leaving Fig. 3 for the moment, the following is clear:

m	$\vdash_x p$	If anything is an M it is a P.
$\exists x$	$m \,.\, s$	There exist things which are both M and S.
$\exists x$	$p \,.\, s$	There exist things which are both P and S.

i.e., If All M is P, and Some S is M, then Some S is P, or Some P is S.

And again,

p	$\vdash_x m$	If All P is M
$\exists x$	$s \,.\, \bar{m}$	And Some S is not M
$\exists x$	$s \,.\, \bar{p}$	Then Some S is not P

the rules for eliminating an element being the same as for hypotheticals. As noted in § 16, we do not need to eliminate any elements: thus in the last example the conclusion could be $\exists x \mid s \,.\, \bar{m} \,.\, \bar{p}$.

Fig. 3 with two universals gives *e.g.*,

All M is P	$m \vdash_x p$
All M is S	$m \vdash_x s.$

Here we cannot eliminate m directly, but we can combine both consequents. We get $m \vdash_x s \,.\, p$. To eliminate m we must

assume $\exists x \mid m$ (there exist things which are M). The whole process is

$$\begin{array}{rcc} & m & x\ p \\ & m & x\ s \\ \hline & m & x\ s\,.\,p \\ \text{Assume} & \exists x & m \\ \hline \text{Then} & \exists x & s\,.\,p \end{array} \qquad \text{Some S's are P's.}$$

In other words, this third figure syllogism is valid only if M's are assumed to exist.

Thus the syllogism

All SP is P
All SP is S
Some S is P whatever S and P may be,

becomes,

$$\begin{array}{rcc} & s\,.\,p & x\ p \\ & s\,.\,p & x\ s \\ \hline & s\,.\,p & x\ s\,.\,p \\ \text{Assume} & \exists x & s\,.\,p \\ \hline \text{And we get} & \exists x & s\,.\,p \end{array} \qquad \begin{array}{l} \text{To eliminate } s\,.\,p \text{ from the ante-} \\ \text{cedent,} \\ \text{(Some S is P),} \end{array}$$

which shows that we can only get the conclusion by assuming it in the course of the proof.

This exhausts all the traditional categorical syllogisms; and the rules are the simple ones we have had in the case of hypotheticals. Elements can be eliminated if they are on opposite sides of the line with the same sign, or on the same side with the opposite sign; and when an element is moved from one side of the line in the premiss to the other in the conclusion it changes sign.

18. *Immediate inferences.*

We can see that

(i) $\exists x \mid s\,.\,p$ is equivalent to Some S's are P's,
and to Some P's are S's.
$\exists x \mid s\,.\,\bar{p}$ is equivalent to Some S's are not P's,
and to Some not-P's are S's,
and to Some S's are not-P's.

(ii) $$\frac{s \mid_x \bar{p}}{p \mid_x \bar{s}}$$

i.e., No S's are P's enables us to conclude that No P's are S's.
Again, $s \mid_x \bar{p}$ is the symbol for All S's are not-P's,
and $p \mid_x \bar{s}$ is the symbol for All P's are not S's.

(iii) $$\frac{s \mid_x p}{\bar{p} \mid_x \bar{s}}$$

Thus All S's are P's (or No S's are not-P's, which has the same symbolic expression) enables us to conclude that All not-P's are not-S's (or No not-P's are S's, which has the same symbolic expression).

(iv) Inference from a universal to a particular proposition involves an assumption about existence.

Thus, *e.g.*, from All S's are P's, we can only conclude that Some S's are P's, or Some P's are S's, if we assume (or know) that S's exist.

$$\begin{array}{l|l} s & x\ p \\ \exists x & s\ .\ s \\ \hline \exists x & s\ .\ p \end{array}$$ There exist things which are both S and S.

replacing one of the S's in the second proposition by P from the first proposition.

Similarly if from All S is P we wish to deduce a particular proposition containing not-S, we can discover what assumption we must make.

We have

$$\begin{array}{l|l} s & x\ p \\ . & . \\ \hline \exists x & \bar{s}\ (\ ). \end{array}$$

and we wish to conclude

We need an existence proposition enabling us to eliminate p. We have it in

$$\exists x \mid \bar{p}\ .\ (\ ).$$

If then we use the proposition $\exists x \mid \bar{p}\ .\ \bar{p}$, we can use one of the $\bar{p}$'s to eliminate p, and can bring the other $\bar{p}$ down into the conclusion.

Thus we can have

$$\begin{array}{l|l} s & x\ p \\ \exists x & \bar{p}\ .\ \bar{p} \\ \hline \exists x & \bar{s}\ .\ \bar{p} \end{array}$$

Some not-S is not P, Some not-P is not S, Some not-S is not-P, some not-P is not-S.

If from No S is P we wish to deduce a particular proposition containing not-S, we must assume that P exists.

$$\begin{array}{l|l} s & x\ \bar{p} \\ \exists x & p\ .\ p \\ \hline \exists x & \bar{s}\ .\ p \end{array}$$

19. $\vdash \mid a\ .\ a$ is equivalent to $\vdash \mid a$: again, $\vdash \mid a \vee a$ is equivalent to $\vdash \mid a$.

Again, from $a \mid \bar{a}$ we can conclude that $\vdash \mid \bar{a} \vee \bar{a}$, *i.e.*, $\vdash \mid \bar{a}$. If a implies not-a, then not-a is true.

$$\begin{array}{rc|c} & a & \bar{a} \\ & \vdash & \bar{a} \vee \bar{a} \\ \hline i.e., & \vdash & \bar{a} \end{array}$$

Again, we have

$$\begin{array}{c|c} a & b \\ a & \bar{b} \\ \hline a & \bar{a} \end{array}$$

eliminating b and bringing one a to the consequent side (an alternative method to that in § 15). And we have $\vdash \mid \bar{a}$ as above.

Thus from the two propositions If a then b, and If a then not-b, it follows that a is false.

In the case of All S is P, No S is P, we should have

$$\begin{array}{rc|cc} & s & x & p \\ & s & x & \bar{p} \\ \hline & s & x & \bar{s} \\ i.e., & \vdash_x & & \bar{s} \vee \bar{s} \\ i.e., & \vdash_x & & \bar{s} \end{array}$$

using $\vdash_x$ to mean "is true whatever x may be".[1] This conclusion would mean, "of any x it may be asserted that it is not S"; *i.e.*, There are no S's. Thus All S is P and No S is P can both be true: in the case, *viz.*, when No S's exist.

20. Thus in Carroll's puzzle about Allen and Brown and Carr, where (*a*) one of the three is always in, and (*b*) Brown never goes out without Allen, it was fallaciously proved that Carr is always in.

The fallacious proof runs thus:

Consider what happens when Carr is out.

We have from (*a*), when Carr is out,

If Brown is out, Allen is in. (*c*).

But we know from (*b*),

If Brown is out, Allen is out. (*d*).

Hence (*c*) cannot be true, for we know that (*d*) is true.

Thus when we suppose that Carr is out, a proposition (*c*) follows which is false. Our supposal that Carr is out is then false. Hence Carr is always in.

The fallacy consists in supposing that (*c*) and (*d*) cannot be both true. We know, however, that they can both be true, and that when they are both true, it follows that "Brown is out" is false. Thus "Brown is in" is the consequence of

[1] See Whitehead and Russell, *Pr. Math.* I.(1), 132, for a limitation we here neglect.

(*c*) and (*d*) taken together; and this is the consequence of supposing that Carr is out. The true conclusion then is, If Carr is out, Brown is in.

The general case here is that in which

"Either a or b or c" is true (1)

and "If a then b" is true (2)

for consider what results from asserting $\bar{c}$ (3).

We have, where $\bar{c}$ is asserted,

$\vdash$	$a \vee b \vee c$	(1)
$\vdash$	$\bar{c}$	(3)
a	b	(2)
$\bar{b}$	a	(4) combining (1) and (3)
$\bar{b}$	$\bar{a}$	(5) from (2).

If $\bar{c}$ is asserted, then both $\bar{b} \mid a$ and $\bar{b} \mid \bar{a}$. Carroll's puzzle is based on taking (4) and (5) as contraries, and concluding that $\vdash \mid \bar{c}$ implies contraries and is therefore false. But we could proceed

$\bar{b}$	a	
$\bar{b}$	$\bar{a}$	
$\bar{b}$	b	eliminating a.
$\vdash$	b	

If $\bar{c}$ is asserted, b follows.

21. $\vdash \mid a$ allows us to conclude $\vdash \mid a \vee \bar{b}$, whatever $\bar{b}$ may be, though not *vice versa*. And $\vdash \mid a \vee \bar{b}$ allows us to infer $b \mid a$. Thus if a is true, so is the proposition If b then a, whatever b may be.

Again, $\vdash \mid \bar{a}$ allows $\vdash \mid \bar{a} \vee b$ and hence $a \mid b$. Or we could express it: $a \mid \bar{\vdash}$ allows $a \,.\, \bar{b} \mid \bar{\vdash}$ and hence $a \mid b$.

$\vdash$	a	$\vdash$	$\bar{a}$	a	$\bar{\vdash}$
$\vdash$	$a \vee \bar{b}$	$\vdash$	$\bar{a} \vee b$	$a \,.\, \bar{b}$	$\bar{\vdash}$
i.e., b	a	a	b	a	b

Thus a false proposition implies any proposition, and a true proposition is implied by any proposition. This result has nothing to do with metaphysics, and is merely the consequence of the meaning given to the words "either . . . or," coupled with the fact that the hypothetical proposition has been given no significance beyond its use in formal inferences. The systematic inner connexion between antecedent and consequent in hypotheticals, and between the various alternatives in disjunctions, insisted on by Idealist Logicians, involve supplementary assertions, which can be incorporated into any process of reasoning, and it would diminish the generality of the logic to introduce them in any other way.

22. A few examples will show the use of the symbolism. For the sake of exposition, examples are taken which have been worked elsewhere, by other types of symbolism.

(i) If English are Europeans, and to take snuff is to use tobacco, which is true: All English who do not take snuff are to be found among Europeans who do not use tobacco, or, all English who do not use tobacco are to be found among Europeans who do not take snuff? (Lewis Carroll.)

Letting e stand for x is English
u for x is European
s for x is a taker of snuff
t for x is a user of tobacco,

we are given:

$$e \mid_x u \quad \text{(i)}$$
$$s \mid_x t \quad \text{(ii)}$$

We are asked, which is correct:

$$e \,.\, \bar{s} \mid_x u \,.\, \bar{t}$$
$$\text{or} \quad e \,.\, \bar{t} \mid_x u \,.\, \bar{s}$$

Now we can express the premisses:

$$e \mid_x u \quad \text{(i)}$$
$$\bar{t} \mid_x \bar{s} \quad \text{(iii)}$$

and it is easy to prove

$$e \,.\, \bar{t} \mid_x u \,.\, \bar{s}$$

This is an instance of the general result:

$$\begin{array}{r|l} a & b \quad \text{(i)} \\ c & d \quad \text{(ii)} \\ \hline a \,.\, c & b \,.\, d \end{array}$$

To prove this we need to use the proposition that conditions can be added to the antecedent of a hypothetical proposition without affecting its truth, *i.e.*,

$$\frac{a \mid b}{a \,.\, c \mid b}$$

which the reader can connect with the result of § 21 by remembering that $a \mid b$ implies $\vdash \mid b \vee \bar{a}$, and hence implies $\vdash \mid b \vee \bar{a} \vee \bar{c}$, which implies $a \,.\, c \mid b$.

Using this result, we have

$$\begin{array}{rl|rl|l} a & b & \rightarrow & a \,.\, c & b & \text{introducing } c \\ c & d & \rightarrow & a \,.\, c & d & \text{introducing } a \\ \hline a \,.\, c & b \,.\, d & \leftarrow & a \,.\, c & b \,.\, d & \text{combining consequents.} \end{array}$$

Again, it is easy to see that

$$\begin{array}{rl|rl} & a & b & \rightarrow & a & \bar{b} \\ & c & d & \rightarrow & \bar{d} & \bar{c} \\ \hline & a\,.\,\bar{d} & \bar{c}\,.\,b & \leftarrow & a\,.\,\bar{d} & \bar{c}\,.\,b \end{array}$$

or again, $\bar{b}\,.\,c \mid \bar{a}\,.\,d$

Again, we have

$$\begin{array}{rl|rl} & a & b & \rightarrow & a & b \vee d \\ & c & d & \rightarrow & c & b \vee d \\ \hline & a \vee c & b \vee d & \leftarrow & a \vee c & b \vee d \end{array}$$

adding d on the consequent side.
adding b
combining antecedents.

These results are often useful.

(ii) If $x\,.\,\bar{a}$ is the same as b, and $a\,.\,\bar{x}$ is the same as c, what is x in terms of a, b, and c? (Lewis, *Symbolic Logic*, p. 204).

We are given

$$\begin{array}{rl} x\,.\,\bar{a} & b \\ b & x\,.\,\bar{a} \\ \hline a\,.\,\bar{x} & c \\ c & a\,.\,\bar{x} \end{array}$$

or, writing out in full,

$$\begin{array}{rll} x\,.\,\bar{a} & b & \text{(i)} \\ b & x & \text{(ii)} \\ b & \bar{a} & \text{(iii)} \\ a\,.\,\bar{x} & c & \text{(iv)} \\ c & a & \text{(v)} \\ c & \bar{x} & \text{(vi)} \end{array}$$

And we have two propositions, *viz.* (i) and (vi), which give information about x, *viz.*,

$$\begin{array}{rll} & x \mid b \vee a & \text{from (i)} \\ & x \mid \bar{c} & \text{(vi)} \\ \text{Combining, we have,} & x \mid b\,.\,\bar{c} \vee a\,.\,\bar{c} & \end{array}$$

and to complete the information, we want to discover the connexion between $b\,.\,\bar{c}$ and a, on the one hand, and $a\,.\,\bar{c}$ and b, on the other. Our premisses give us (iii), with the required information, *viz.*,

$$\begin{array}{rll} b & \bar{a} & \text{(iii)} \\ a & \bar{b} & \text{from (iii)} \end{array}$$

Our complete result then is

$$x \mid \bar{a}\,.\,b\,.\,\bar{c} \vee a\,.\,\bar{b}\,.\,\bar{c}$$

x is not c, and again, it is a or b but not both.

(iii) Given: Either A is B or C is not D
Either C is D or E is F
Either A is B or E is not F
Prove that A is B. (Boole, p. 219, Lewis, p. 216.)

Letting a, b and c stand for A is B, C is D, E is F, we have

$$\begin{array}{rll} \vdash & a \vee \bar{b} & \text{(i)} \\ \vdash & b \vee c & \text{(ii)} \\ \vdash & a \vee \bar{c} & \text{(iii) We want to prove } \vdash \mid a. \end{array}$$

These give	b	a	from (i) Taking first the proposi-
	c	a	from (iii) [tions bearing on a.
	$\vdash$	$b \vee c$	(ii) which we see we can use as
And we have	$\therefore \vdash$	$a \vee a$	[it stands.
	i.e., $\vdash$	a	

(iv) A set of balls are all of them spotted with one or more of the colours red, green and blue, and are numbered. And all the balls spotted with red are also spotted with blue. All the odd blue balls, and all the even balls which are not both red and green, are on the table. Describe the balls not on the table. (Lewis, p. 209.)

Let r stand for x is a ball spotted with red.

g	x is a ball spotted with green.
b	x is a ball spotted with blue.
e	x is a ball with an even number.
$\bar{e}$	x is a ball with an odd number (since all the balls are numbered).
t	x is a ball on the table.

In what follows we shall omit the small x from the dividing line.

We have

	$\vdash$	$r \vee g \vee b$	(i) Either red or green or blue.
	r	b	(ii) All spotted with red, spotted with blue.
	$\bar{e} \,.\, b$	t	(iii) All odd blue balls on the table.
	$e \,.\, (\overline{r \,.\, g})$	t	(iv) $(\overline{r \,.\, g})$ = not both red and
Wanted	$\bar{t}$	?	[green.

We see at once that (iii) and (iv) give us what we want, and that the neatest statement is,

$\bar{e} \,.\, \bar{t}$	$\bar{b}$	from (iii)
	$\bar{b} \,.\, \bar{r}$	from (ii)
	$\bar{b} \,.\, \bar{r} \,.\, g$	from (i)
$e \,.\, \bar{t}$	$r \,.\, g$	from (iv)
	$r \,.\, b \,.\, g$	from (ii).

Thus

$\bar{e} \,.\, \bar{t}$	$\bar{r} \,.\, \bar{b} \,.\, g$
$e \,.\, \bar{t}$	$r \,.\, b \,.\, g$

i.e., the balls not on the table are either odd, in which case they are green alone (*i.e.*, green and not red and not blue): or even, in which case they are red, green, and blue.

(v) A certain club has the following rules: (*a*) The financial committee shall be chosen from among the general committee; (*b*) no-one shall be a member both of the general and

library committees unless he be also on the financial committee; (*c*) no member of the library committee shall be on the financial committee. Simplify the rules. (Venn, *Symbolic Logic*,[2] p. 331, Lewis, p. 201.)

Let f stand for x is a member of the financial committee.
g x is a member of the general committee.
l x is a member of the library committee.

Then we are given

$$\begin{array}{rcll} f & \mid & g & \text{(i)} \\ gl & \mid & \bar{f} & \text{(ii)} \\ l & \mid & \bar{f} & \text{(iii)} \end{array}$$

Looking at these, we see that (ii) and (iii) are closely connected, and indeed together give

$$\begin{array}{rcll} & g\,.\,l & \mid & f\,.\,\bar{f} & \\ i.e., & g\,.\,l & \mid & 0 & \text{which shows that rule (ii) is badly stated.} \\ i.e., & l & \mid & \bar{g} & \text{(iv)} \end{array}$$

We have now,

$$\begin{array}{rcll} f & \mid & g & \text{(i)} \\ l & \mid & \bar{f} & \text{(iii)} \\ l & \mid & \bar{g} & \text{(iv)} \end{array}$$

But then we see that (iii) can be deduced at once from (i) and (iv); hence our rules reduce to (i) and (iv).

A member of the finance committee must be on the general committee; a member of the library committee must not be on the general committee.

(vi) What is the precise point at issue between two disputants, one of whom (A) asserts that man should be defined as a rational animal, while the other (B) insists that man should be defined as a rational being, and admits that all men are animals? (*Cf.* Lewis, p. 205.)
Using m to stand for x is a man

r x is a rational being
a x is an animal

we have

A asserts

$$\begin{array}{rcl} m & \mid & r\,.\,a \\ r\,.\,a & \mid & m \end{array}$$

or in full,

$$\begin{array}{rcll} m & \mid & r & \text{(i)} \\ m & \mid & a & \text{(ii)} \\ r\,.\,a & \mid & m & \text{(iii)} \end{array}$$

B asserts

$$\begin{array}{rcll} m & \mid & r & \text{(i)} \\ r & \mid & m & \text{(iv)} \\ m & \mid & a & \text{(ii)} \end{array}$$

numbering the propositions which are identical by the same numbers. The question then is as to A's attitude to (iv), and B's to (iii), since both agree on (i) and (ii). We see at once that B would accept (iii), since he insists on $r \mid m$. But A would not accept (iv), since he insists rather on $r \mid m \vee \bar{a}$ (from iii). They differ then about the relation of r and a.

If we ask what B's view is of the relation of r and a, we see from (iv) and (ii) that he asserts $r \mid a$. A does not admit this, for he regards it as necessary to include animality in his definition of man along with rationality.

(vii) The members of a certain collection are classified in three ways—as a's or not, as b's or not, and as c's or not. It is then found that the class b is made up precisely of the $a\bar{c}$ and the $c\bar{a}$. How is the class c constituted? (Lewis, p. 203, adapted from Venn.)

For simplicity let us use in the symbolism a, b, and c, for x is an a, b, and c respectively.

We are told that members of class b are either $a\bar{c}$ or $\bar{a}c$. And also that all $a\bar{c}$'s are b's and all $\bar{a}c$'s are b's. Thus we have

$$\begin{array}{l|ll} b & (a\bar{c}) \vee (\bar{a}c) & \text{(i)} \\ a\bar{c} & b & \text{(ii)} \\ \bar{a}c & b & \text{(iii)} \end{array}$$

We want information about c; and we can get it in (i) and (iii). To extract it from (i), drop a from the $a\bar{c}$ in the consequent, and transfer the $\bar{c}$ to the antecedent, bringing b to the consequent. This gives

$$c \mid \bar{b} \vee \bar{a}c \quad \text{(iv)}.$$

We could write it

$$c \mid \bar{b}c \vee \bar{a}c$$

so as to use all the information we can from (iii).

We then get

$$c \mid \bar{b}ca \vee \bar{a}cb \text{ since (iii) gives } \bar{b}c \mid a.$$

Dropping c, we have

$$c \mid \bar{b}a \vee \bar{a}b.$$

Thus c consists of a's that are not b, and b's that are not a.

Are all the $a\bar{b}$'s, and all the $\bar{a}b$'s, in the c class?

(ii) gives us, $a\bar{b} \mid c$.

What of $\bar{a}b$? We get this from (i), by dropping $\bar{c}$ from the $a\bar{c}$ in the consequent, and bringing the a over to the antecedent.

This gives

$$\begin{array}{l|ll} \bar{a}b & \bar{a}c & \text{Or, dropping } \bar{a}, \\ \bar{a}b & c. & \end{array}$$

We thus see that c is made up precisely of the a's which are not b and the b's which are not a.

It will be seen that the symbolism enables us to simplify our material, and to extract relevant information. We can keep close to our original material without being overwhelmed by it. The symbolism is an aid to purposeful selection, which is the essence of reasoning.

23. A brief note about implications will show how the use of the symbolism can be extended, and how it can be utilised (for example) in reading Part I, Section A, of Whitehead and Russell's *Principia Mathematica*.

"p implies q" can be written $p \mid q$, or $\vdash \mid \bar{p} \vee q$.

This principle, which allows either symbolism to be used, can be itself written:

$$\frac{p \mid q}{\vdash \mid \bar{p} \vee q} \qquad \text{and} \qquad \frac{\vdash \mid \bar{p} \vee q}{p \mid q}$$

This is Whitehead and Russell's proposition *1·01.

"(p implies that q implies r) implies (q implies that p implies r)"—proposition *2·04—can be written:

$$\frac{p \mid \bar{q} \vee r}{q \mid \bar{p} \vee r} \quad \text{or} \quad \frac{p \mid q \mid r}{q \mid p \mid r} \quad \text{or} \quad \frac{p \mid \dfrac{q}{r}}{q \mid \dfrac{p}{r}}$$

Of these the first is simplest for practical purposes, the second or third most useful for following the proofs of Whitehead and Russell.

"(q implies r)" implies "(p implies q) implies (p implies r)"—proposition *2·05—can be written:

$$\frac{q \mid r}{\bar{p} \vee q \mid \bar{p} \vee r}$$

or, in the form easiest for the proof of Whitehead and Russell,

$$q \mid r \;\Big|\; \frac{p}{p} \,\Big|\, \frac{q}{r}$$

"(p implies q)" implies "(q implies r) implies (p implies r)"—*2·06—can be written:

$$\frac{p \mid q}{\bar{q} \vee r \mid \bar{p} \vee r} \qquad \text{or} \qquad p \mid q \;\Big|\; \frac{q}{p} \,\Big|\, \frac{r}{r}$$

The proof of *2·06 in *Principia Mathematica* depends on *2·04 and *2·05; we give it as an illustration of the way in which the present symbolism can be used in making the transition to that of *Principia Mathematica*.

Writing * 2·04 in the form

$$\begin{array}{c|c} p & \dfrac{q}{r} \\ \hline q & \dfrac{p}{r} \end{array}$$

let us substitute, for p, $q \mid r$

for q, $p \mid q$

for r, $p \mid r$

* 2·04 now becomes,

$$\begin{array}{c|c} q \mid r & \dfrac{p \mid q}{p \mid r} \\ \hline p \mid q & \dfrac{q \mid r}{p \mid r} \end{array}$$

Now * 2·05 shows that

$$q \mid r \quad \Big| \quad \frac{p \mid q}{p \mid r} \qquad (1)$$

Hence since we have just shown that this implies

$$p \mid q \quad \Big| \quad \frac{q \mid r}{p \mid r} \qquad (2)$$

we can assert (2), which is * 2·06.

Notice that, when the notion "and" is introduced, * 2·05 can be put in the form

"(q implies r) and (p implies q)" implies that "(p implies r)".

$$\begin{array}{c|c} q & r \\ p & q \\ \hline p & r \end{array}$$

* 2·06 can be put in the form

"(p implies q) and (q implies r)" implies that (p implies r).

$$\begin{array}{c|c} p & q \\ q & r \\ \hline p & r \end{array}$$

Hence these two propositions are described as the principle of the syllogism.

The logical apparatus developed by Whitehead and Russell is put in a form suitable for the proof of the propositions from primitive propositions; and all the results we have assumed will be found either proved or taken as primitive in their work. Again it will be found that we have used all the important results proved regarding implications in Part I, Section A, of their work.

IV.—"THE IDEA OF NECESSARY CONNEXION" (II).

By R. B. Braithwaite.

I will deal with eight types of criticism that have been made against theories of causality of the sort propounded by Hume, and will see how they can be met on the uniformity-plus-customary-belief theory that I have advanced.[1]

(1) It is frequently held that the necessity of a causal relation is one of those facts which we apprehend immediately. "It seems that the true vindication of causality," writes Mr. Prichard, ". . . lies in the dogmatic method which Kant rejects. It consists in insight into the fact that it is of the very nature of a physical event to be an element in a process of change undergone by a system of substances in space, this process being through and through necessary in the sense that any event (*i.e.*, the attainment of any state by a substance) is the outcome of certain preceding events (*i.e.*, the previous attainment of certain states by it and other substances), and is similarly the condition of certain subsequent events. To attain this insight, we have only to reflect upon what we really mean by a 'physical event'."[2] This, of course, is conclusive for anyone who has attained this insight; for a person who has not succeeded in attaining it, it is no argument at all.

(2) There is a diluted form of this contention which must be mentioned, since it is undoubtedly the principal cause of beliefs in genuine causal connexions. Many philosophers believe that, though we do not apprehend directly the necessity of all causal relations, yet we apprehend this necessity directly in volitional experiences. It is frequently held that when a person wills to move his hand, or to pro-

[1] I am deliberately omitting to discuss the argument of Kant's Second Analogy, partly because I do not feel that I understand it thoroughly, and partly because, to the extent that the argument tries to prove more than the existence of objective successions, it seems to me to be a "transcendental" argument which properly falls under my last head.

[2] *Kant's Theory of Knowledge*, p. 300.

duce a mental image, he knows not only that his willing causes his hand to move or the image to be produced, but that it causes this by a direct relation whose necessity he apprehends directly. If I could accept this contention, it would show, not indeed that my analysis of causality was incorrect when applied to physical facts, but that it would not do for facts of volition. Consequently it would throw doubt upon my whole analysis, for we certainly think that the necessity of all causal relations is of the same nature. This view, that in volition we are directly acquainted with causal necessity, has been refuted by Hume in well-known arguments in Section VII of the *Enquiry;* and I should not deal with them further had not Dr. Broad[1] questioned their cogency. I will try to state as briefly as possible why I think that Hume is right and Broad is wrong in this matter.

Hume's second argument is that we have to learn by experience that the will has "an influence over the tongue and fingers, not over the heart or liver," and the reason for this "would never embarrass us, were we conscious of a power in the former case, not in the latter". To which Dr. Broad replies that this argument is only valid against the contention that we know immediately that a volition is a sufficient condition, and not against the contention that we know immediately that it is a necessary condition, of the movement. Now I am sure that we cannot know immediately that it is a necessary condition, because it is not in fact a necessary condition. According to the ordinary usage of the terms "necessary condition" and "sufficient condition," A is a necessary condition of B, and B a sufficient condition of A, if the occurrence of B necessitates (in some way) the occurrence of A. But in our case the fingers can move without a previous act of willing if the muscles are electrically stimulated. So the previous act of willing cannot be necessary to the movement. But neglecting this consideration, it seems to me certain that all that it is plausible to say is that we know immediately that a volition has some sort of necessary connexion with the movement, and not plausible (as Dr. Broad thinks) to say that we know immediately that the subsequent movement necessitates the previous volition. What I think that it might be plausible to maintain is that we know immediately that the volition is part of a sufficient cause of the movement. That is to say, I know immediately that, given certain other conditions which I have to learn by experience, my volition is a sufficient cause of the move-

[1] *The Mind and its Place in Nature*, p. 101.

ment of my fingers. This is not refuted by Hume's second argument; but here it is that Hume's third argument comes in. For "we learn from anatomy, that the immediate object of power in voluntary motion is not the member itself which is moved, but certain muscles, and nerves, and animal spirits, and, perhaps, something still more minute and more unknown, through which the motion is successively propagated, ere it reach the member itself whose motion is the immediate object of volition". So the immediate effect of my volition and the other conditions is a bodily event, which (together with more conditions) causes another event, and so on, until finally a set of things cause the movement, no part of whose immediate cause is the volition. And about none of these intermediate causal relations do we profess any immediate knowledge. It seems to me then as absurd to profess immediate knowledge as to the relations of the end steps as to pretend to know immediately what being an ancestor is without knowing immediately what being a parent is. So I agree with Hume in thinking that there is no immediate knowledge that my volition is the cause (or part of a cause) of a bodily movement.

(3) I will next deal with an objection which holds against most theories of causality. According to the theory which I have advanced, a particular causal proposition always asserts a causal law, and its "necessity" is to be found in that of the causal law. This analysis of the necessity of particular causal propositions is common ground to most theories of causality.

But it has recently been called in question by Prof. Ducasse,[1] who holds that causal necessity is primarily concerned with particular relations between events and that causal laws are derivative conceptions. He distinguishes between the cause of an event, which is sufficient to the event, and the condition of an event, which is necessary to it; and he defines the cause of a change as that change which alone occurred in the immediate environment immediately before. So if, as a matter of fact, the breaking of a window is immediately preceded both by the motion of a stone in its neighbourhood and by sound waves due to a canary also in its immediate neighbourhood, both these events make up, by definition, the cause of the window's

[1] *Causation and the Types of Necessity:* Seattle, 1924. And a paper "On the Nature and the Observability of the Causal Relation," *Journal of Philosophy*, vol. xxiii, p. 57 *et seq.* [In a footnote to a review of the book (MIND, N.S., vol. xxxiii, p. 460 *n.*), I attributed to Prof. Ducasse, through a stupid misunderstanding, something which he did not say.]

breaking. Prof. Ducasse explains this apparent absurdity by saying that we are confusing two questions: "What was sufficient then and there to the occurrence of the concrete individual event?" and "What was no more than sufficient (*i.e.*, both necessary and sufficient) to this occurrence?"; and that the canary's sound waves, being part of the sufficient preceding and neighbouring event, are part of the cause of the effect, though they are not necessary to it. I am sure that this is not a correct analysis of the use of the word "cause" even by a person "whose English has not been contaminated by Hume". If a person dies through eating one pound of arsenic when an ounce alone would be sufficient to produce his death, we say vaguely that the cause of his death was the taking of arsenic, but we should be wrong in making this precise, and saying that the cause of his death was the consumption of a pound of arsenic. It is not one event in itself which causes another event, but one event in virtue of having some property which causes another event to have some property; and so the cause of Prof. Ducasse's worm being crushed by the fall of a hundred-pound rock is not the event's having the property of being the fall of a hundred-pound rock, but the event's having the property of being a rock weighing more than (perhaps) one pound. The requirement that an event is necessary to the effect does enter into the ordinary notion of cause, and this necessity can only be given in terms of properties of hypothetical events, that is, of causal laws.

So I agree with the orthodox view that causal necessity is found primarily in causal laws and only derivatively in individual events; or, as Mr. Joseph puts it, that "the causal relation which connects *a* with *x* connects a cause of the *nature a* with an effect of the *nature x*".[1]

(4) On the page preceding that upon which this sentence occurs, Mr. Joseph defends the uniformity of causation by an argument which, were it successful, would prove its necessity and so overthrow my thesis. "A thing, to be at all, must be something, and can only be what it is. To assert a causal connexion between *a* and *x* implies that *a* acts as it does because it is what it is; because, in fact, it is *a*. So long therefore as it is *a*, it must act thus; and to assert that it may act otherwise on a subsequent occasion is to assert that what is *a* is something else than the *a* which it is declared to be." Now so far as this passage is merely stating that the assertion of a causal connexion between two particular

[1] *An Introduction to Logic* (2nd edition), p. 409.

things involves the assertion of a causal law, so long as the "must" is taken as a causal "must," I should of course agree with it. But it seems to me that Mr. Joseph wishes to assert the proposition that if a thing a has P, P being the property of having a causal connexion with x, then there follows logically from the proposition that a thing has not the property P the proposition that it is not a. This is equivalent to the proposition that, if a thing a has P, then it follows from its being a that it has P. Now it is true that it follows logically from both a's having P and a thing's not having P that this thing is not a; but it is in general false that, if a has P, there logically follows from the single proposition that a thing has not P the proposition that it is not a.[1] This proposition is true only when the property P follows logically from the "essence" of a. Mr. Joseph (as I understand him) would make the causal properties of a thing as "internal" to the thing as these logically necessary properties, so that causal necessity would resemble logical necessity in this important feature at least, and to deny it would be "in flat conflict with the Law of Identity". But, as I have said, I cannot accept Mr. Joseph's view that if a has a causal property P, then it follows simply from its being a that it has P.

(5) According to the simple uniformity theory of causality, a causal law is one universal proposition; so its contradictory is a particular proposition. But we seem frequently to be able to deny a causal law without asserting a particular (non-psychological) proposition. *E.g.*, we can deny the causal law that day causes night without asserting the particular proposition that some days are not followed by nights. My theory gets round this difficulty; for a causal law, according to it, consists of two universal propositions, so that to deny it is to assert either that the non-psychological universal proposition is false or that it is not generally believed. So we can perfectly well deny the truth of the causal law that day causes night while admitting the truth of the proposition asserting a constant conjunction, if some member of our class does not believe in this constant conjunction.

(6) This disposes of the contingencies which never occur: I must now deal with the necessities which never occur. Mr. Johnson tries to show that "universals of law" must be different from "universals of fact" because they state not only what happens, but what would, but as a matter of fact never does, happen. "The factual universal may be expressed in

[1] See G. E. Moore, *Philosophical Studies*, p. 276 *et seqq.*

the form 'Every substantive in the universe of reality is Q if P'; while the assertion of law assumes the form 'Any substantive in the universe of reality would be Q if it were P'. . . . My first formula may be said to express a mere invariability in the association of Q with P, while the second expresses the unconditional connection between Q and P. . . . The universal of fact covers only the actual, whereas the universal of law extends beyond the actual into the range of the possible."[1]

There are two ways in which we want causal laws to deal with "the possible" as well as "the actual". If I see an object which I mistakenly believe to be a lighted bomb, I behave as if the causal law that lighted bombs explode applied to this particular case. But even a simple uniformity theory applies to "the possible" in this sense: even if all we believe is that, as a matter of fact all P's are Q's, we shall think that a thing which we judge mistakenly to be a P is also a Q. Perhaps my analysis does extend the universal of law a little further into "the possible" in that it analyses causation in terms of beliefs which people have under suitable circumstances, one set of these circumstances being a person's having an erroneous belief in the occurrence of the cause.

Mr. Johnson is concerned with the other way in which we require causal laws to deal with "the possible". In many cases we assert causal laws connecting a thing's having a property P with its having a property Q, when there are no things whatever which have the property P. Now the universal of fact that all P's are Q's is true whatever the property Q is, if there are in fact no P's. Nevertheless we distinguish the corresponding universals of law according to what Q is, and we believe some and disbelieve others. *E.g.*, I believe that gases with unextended molecules obey Boyle's Law, and I disbelieve that gases with unextended molecules obey some other law connecting pressure and volume. Whereas if all I believed was a universal of fact in each case, I should believe them equally, since I know that in fact no gases have unextended molecules. But my psychological criterion eliminates the second proposition, since the only people who believe it do so on the ground that it logically follows from the non-existence of gases with unextended molecules, and I have expressly ruled out beliefs which are logically demonstrative from my psychological criterion. The proposition that these mythical gases obey Boyle's Law, on the other hand, is a causal law, because it is believed by

[1] *Logic Part III*, p. 6. I have omitted a qualification of Mr. Johnson's which is irrelevant to the present issue.

people who have not deduced it from the non-existence of such gases.

But I am not sure that a person who held a simple uniformity theory of causality could not meet Mr. Johnson's arguments. For he could say that, in asserting that gases with unextended molecules obey Boyle's Law, the assertor is not wishing to make merely a statement about gases with unextended molecules, but is making in an elliptical form a statement about all gases; namely, that the smaller the molecules of the gas, the more nearly does the gas obey Boyle's Law. And this, even taken as a pure universal of fact, is only true for Boyle's Law. I think it can be plausibly contended that in all cases where we assert what appears to be a proposition about some value of a variable which we know that the variable cannot take, we are really asserting a proposition about the limit of the property concerned; *i.e.*, about what the property is in the "neighbourhood" of this value.

Similarly, I do not think that a disciple of Mach need be convinced by Mr. Johnson's argument about the brakeless train. "The force of this proposition ['Any railway journey with a brakeless train would be liable to accident'] obviously extends over what must be called a wider range than the whole class of actual railway journeys; if we assume as a matter of fact that all railway journeys use a brake. This illustration suggests a wide class of cases which indicate human foresight or prudence; and in all such cases the distinction between the nomically necessary and the factual universal is quite apparent. If any action that might be characterised as such or such would produce undesirable consequences, and if human conduct is actually determined by knowledge of such consequences, then, as a matter of fact, those actions will never take place."[1] Dr. Broad puts the same point more strongly in his commentary on Mr. Johnson: "The belief that if P were to happen Q *would* happen is often the reason why P never does happen, and therefore why the factual universal 'No P is non-Q' is true. . . . Now, if the general *belief in x* is what causes *y to be true* it can hardly be maintained that *x* and *y* are the same proposition."[2] I am entirely unable to accept this contention. Of particular propositions it is obviously untrue. It is sensible, if not plausible, to suppose that one of the causes of the defeat of the Labour Government in 1924 was the general belief that it would be defeated; and that one of the principal causes

[1] *Logic Part III*, p. 12. [2] MIND, N.S., vol. xxxiii, p. 370.

of the European War was the general belief that there would be such a war. The dogma stated by Dr. Broad would exclude all "final causes," where prescience of the end is one of the causes of the action.

And I can see no more reason for it to hold of general than of particular propositions. If I believe (for any reason) that all my actions of a certain kind will be followed by evil consequences, I refrain from doing such actions, and hence make the universal of fact true. And this seems to me to happen whether or not I suppose that there is something behind the mere universal of fact. My belief in this alone is enough. Suppose that the orthodox view of causality were true, and that all the facts in the world could be grouped into systems within which causation was immanent. Then, if there were any non-logical relations whatever between members of different systems, these relations would be accidental. It must be possible to collect some of the accidental propositions into a generalisation which would be a mere universal of fact, *e.g.*, all Conservative Prime Ministers of England between 1903 and 2003 have names beginning with B. Then, if a budding politician whose name did not begin with B happened to know this mere universal of fact, it would be reasonable for him to act upon it and join the Labour Party.

But, of course, how could anyone know such a universal of fact? I suspect that the real sting of the argument is not the difficulty in seeing how a belief in "All P's are Q's" can prevent there being any P's, but the difficulty in seeing what ground there can be for knowledge, or even for rational belief, in a universal of fact which is not derived from belief in a universal of law. This comes out pretty clearly, I think, in the passage from Mr. Johnson which I have quoted. For he speaks of "knowledge" instead of "belief"—"if human conduct is actually determined by knowledge of such consequences"—whereas the argument requires only belief, rational or irrational. So it seems to me that the apparent strength of this argument is derived entirely from the "transcendental" argument that, without genuine causation, no knowledge or rational belief in any universal proposition is possible (unless, of course, the proposition is such that it is believed on logically demonstrative grounds).

(7) This seems to me to be the case also with the argument that permanent substances presuppose genuine causal relations. It is frequently held that the unity of a substance is a causal unity, so that the relation between two states which determines that they are states of one substance is a causal relation. But this doctrine seems to me quite compatible

with a Humian analysis of causal relations. For the principle connecting into a unity the states of the substance may quite as well be a universal of fact as a universal of law: our only reason for thinking that it must be the latter instead of the former is that we want some justification for believing that the substance will persist into the future, *i.e.*, that the causal law determining it will cover unknown instances. But this is just our desire for the legitimacy of induction which we must now consider.

(8) I have left till the end the most serious objection to an analysis of causality along Hume's lines. If we accept a theory which reduces the assertion of a causal law to the assertion of two universals of fact, what possible justification can we have for asserting these universals of fact? What rational basis can there be for the process of induction, upon which we base almost all our knowledge of matters of fact? If I do not believe that there is a genuine causal connexion between putting a match to the gas and the gas lighting what possible right can I have to believe the universal of fact that the gas under such circumstances does light? And if I do not believe that there is a genuine causal connexion between a person's considering a proposition and his believing it, what possible justification have I for believing the psychological universal of fact which I have made one of the criteria of a causal law? I can only answer that I can produce no logical justification. But I am so ignorant as to what knowledge or rational belief is that I am not prepared to say that it must have a justification of a particular sort: like Earl Warenne, who produced his sword to Edward I.'s commissioners as his title to his rights, I should answer that I am certain that some of my beliefs are rational and that my knowledge is knowledge, although I do not know by what warrant I hold them. "We are all, I think, in this strange position that we do *know* many things, with regard to which we *know* further that we must have had evidence for them, and yet we do not know *how* we know them, *i.e.*, we do not know what the evidence was."[1] Nor do we know that the evidence must be of a certain nature, like title deeds which have been mislaid. It may be that I hold my beliefs only through the valour of my ancestors. So I am never convinced by any "transcendental" argument that certain propositions are the necessary presuppositions of knowledge of a certain sort.

Even assuming that our reasons for believing in an inductive argument must have some similarities to our

[1] G. E. Moore in *Contemporary British Philosophy II*, p. 206.

reasons for believing in a deductive argument, it seems to me by no means certain that the former require the assumption of genuine causal necessity. In the direct applications of the theory of probability to induction, such as Laplace's Rule of Succession or the ingenious Appendix to Mr. Johnson's *Logic Part III*, no such assumption is required: we pass directly from some principle of indifference, by which we assert equal probabilities, to some proposition about the probability of an unknown event. Though I am not able to accept the assumptions involved in either of these methods, it does not seem to me impossible that, if there were only a limited number of things in the world, we should be able to attach some probability to a certain combination of them. But, granting that any logical justification for induction requires the assumption of genuine causal necessity, this alone is not nearly enough. The only detailed attempt to work out a rationale of induction is that of Mr. Keynes in his *Treatise on Probability;* and this justification presupposes not only genuine causal connexions but also a very difficult theory of probability and some extremely unplausible propositions about the sorts of things in the world. I cannot see that a philosopher who rejects these doctrines of Mr. Keynes has any right to complain that Hume's theory of causality makes beliefs arrived at by induction unreasonable, until he has shown that he is in a better position himself.

It seems to me possible that we have been mistaken in expecting to find a justification for our belief in inductive propositions which is of the same nature as that for our belief in a valid syllogism. If a theory similar to Hume's is correct, our inductive inferences are based on "custom" and not on reasons which would satisfy a logician: their study is a part of the science of "human nature" or of logic in the sense of "analysis and criticism of thought," but it cannot form part of any formal system of deductive logic. On this view, the business of inductive logic should be to distinguish, in Hume's words, what arises from "the understanding, that is, the general and more establish'd properties of the imagination" from what arises from "the trivial suggestions of the fancy". How this can be done must vary with the subject-matter. As far as the physical sciences are concerned, the distinction between the various experientially possible generalisations seems to be made largely by notions of what is right and proper, *e.g.*, that action at a distance is improper (as Mr. Russell thinks) or that the conservation of something is proper (as M. Meyerson thinks). And, of course, the main cause of our beliefs obtained by "scientific method" is that

so far it has not let us down badly. But I must not pursue this fascinating subject.[1]

According to the theory which I have advanced, to say that a causal proposition is true is to answer two questions, one non-psychological and one about beliefs, both in the affirmative. Since the scientist or the *Naturphilosoph* is interested only in the non-psychological universal of fact, he is clearly within his rights in accepting a simple uniformity theory of causality, and then in investigating whether the uniformity cannot be subsumed under other uniformities which are simpler. But to pass from universals of fact to universals of law, we must admit (according to my view) very ambiguous psychological propositions about customary beliefs. So my theory combines a "naturalism" about the scientifically important things with a "humanism" about the psychological excrescences which it makes the *differentiæ* of causal laws. It thus satisfies the problem which is before every philosopher, to distinguish what is due to the world of nature from what is due to the spirit of man, to "render unto Cæsar the things that are Cæsar's, and unto God the things that are God's".

[1] What positive views on induction I have, I derive from Mr. F. P. Ramsey.

V.—DISCUSSIONS.

SINGULAR PROPOSITIONS.

THE points which I wish to consider arise in connexion with a certain analysis of singular propositions, which has been suggested recently by Mr. J. A. Chadwick.[1] I wish to raise questions concerning singular propositions with regard to their having or lacking existential import. By existential import, in this connexion, I mean existential import with respect to individuals. It is not easy to find a suitable starting-point for a discussion of this kind, but I think that the following approach may perhaps be clear. We may begin with our common understanding of what it means merely to deny a proposition. Whoever merely denies a proposition is holding some proposition which would commonly be called a contradictory of the proposition denied. For example, whoever denies that everything has a certain character, f, is holding a proposition from which it follows that something lacks f, and which follows from the proposition, "something lacks f"; and the proposition "something lacks f" is contradictory to the proposition "everything has f". Conversely, whoever denies that something lacks f is holding a proposition which entails and follows from the proposition, "everything has f". Again, I should say that whoever denies with regard to *this* that it has f is holding a proposition which entails and follows from the proposition, "*this* does not have f". Now "*this* has f" is a singular proposition; and it is in connexion with such propositions that the questions which I wish to consider arise.

We may, in what follows, confine attention to singular propositions of the form "a has f," since the points with which I shall be concerned can easily be seen to apply also to other singular propositions, including relational propositions and elementary functions of singular propositions. Let there be given a singular proposition, a has f, and another singular proposition, a does not have f. These propositions would commonly be said to be contradictories. Now I wish to use the words "proper contradictories" in such a sense that, if p_1, p_2 are proper contradictories, the proposition $p_1 \vee p_2$ does not have existential import. Two propositions p_1, p_2 are mutually contradictory if, and only if, they are logically equivalent, respectively, to the affirmation and the denial of some one and the

[1] "On Propositions belonging to Logic," MIND, No. 143 (July, 1927), pp. 347-353.

same proposition.[1] I shall say that p_1, p_2 are proper contradictories if, and only if, they are contradictories, and $p_1 \vee p_2$ does not have existential import. The question arises whether "a has f" and "a does not have f" are proper contradictories. Note that each of these propositions entails the proposition

$$(\exists x) \,.\, x \text{ has } f \text{ or } x \text{ does not have } f.$$

In a discussion in a recent number of MIND, I had occasion to point out that a proposition which entails some proposition of the form $(\exists x) \,.\, fx \vee \sim fx$ must have existential import, since every proposition of this form has existential import; and thus that "a has f" and "a does not have f" are not properly contradictory.[2] I held, further, in that discussion, that the nature of any singular proposition is such that there is no proposition properly contradictory to it. This view is supported by the observation that any singular proposition involves at least one individual as a constituent, and is thus existentially dependent upon some individual. Thus, if fx is any function whatever, of which fa is a value, it would seem that both the affirmation and the denial of fa involve a in such a way as to entail the existence of at least one individual.

In order to be able to meet this difficulty, and at the same time to be able to hold that there are propositions properly contradictory to singular propositions, Mr. Chadwick advanced the view which I wish to consider, and which I will now attempt to explain. Mr. Chadwick holds that the proposition "a does not have f" is to be distinguished from the proposition "It is not the case that a has f".[3] According to him, the first of these propositions has existential import, but the second does not; and he holds that "a has f" and "It is not the case that a has f" are proper contradictories; and that "a does not have f" and "It is not the case that a does not have f" are proper contradictories. Note that, according to this view, "a has f" is not to be confused with "It is not the case that a does not have f". It is held that this latter proposition does not have existential import with respect to individuals. Thus, in opposition to my view that no singular proposition has a proper contradictory, Mr. Chadwick is holding that all singular propositions have proper contradictories.

It is clear that if both the affirmation and the denial of a proposition entail existence, proper contradictories do not arise. I shall present arguments designed to show that all contingent singular propositions have existential import, and other arguments designed to show that all singular propositions without exception have existential import. It will be seen that these arguments apply not only to primary propositions, but to elementary functions of

[1] Of course, it might be held that a proposition cannot have more than one contradictory. To hold this is equivalent to holding that distinct propositions cannot be logically equivalent.

[2] "On Propositions belonging to Logic," No. 143 (July, 1927), pp. 342-346.

[3] *Loc. cit.*, p. 347.

primary propositions as well; that is, the arguments tend to show that all contingent elementary functions of primary propositions entail existence, and that *all* elementary functions of primary propositions entail existence.

There is one other view which Mr. Chadwick advances, and which I wish to consider, especially in respect to its bearing on his view that all singular propositions have proper contradictories. What I shall say in this connexion does not seem to me to be incompatible with anything that Mr. Chadwick is holding, and I think that he would not disagree with me at this point; but it seems to me that the matter to be considered wants clearing up in view of what I shall maintain subsequently. Mr. Chadwick holds that there are propositions which could be expressed by the words "this exists," where "this" is employed merely demonstratively.[1] In this connexion, he suggests that propositions of the kind "It is not the case that a has f" are logically equivalent to, and might be held to be analysed by, disjunctive functions of the kind "It is not the case that a exists, or a does not have f". If this analysis is admitted, the result is that propositions of the kind "It is not the case that a has f," with one exception, are avoided; and we are not required to suppose that in general there are propositions which could be expressed by "It is not the case that a has f" as distinguished from "a does not have f".

Now if there are propositions which could be expressed by the words "this exists," they are singular propositions. Accordingly, the analysis which has been applied to singular propositions generally is relevant here. "a exists" has existential import, as does "a does not exist"; whereas, neither "It is not the case that a exists" nor "It is not the case that a does not exist" entails existence. But, with this exception, we are not required to distinguish between "It is not the case that a has f" and "a does not have f," since the sense which "It is not the case that a has f" is required to have can be held to be expressed by "It is not the case that a exists, or a does not have f". This latter function does not have existential import if "It is not the case that a exists" does not; and such a function can always be found. On the other hand, if we adopt the straightforward view that "It is not the case that a has f" is a primary proposition, without existential import and thus different from "a does not have f," it is not necessary to hold that there are propositions which could be expressed by the words "this exists". Of course, it does not in the least follow from the view that there are propositions of the kind "this exists" that the proposition "It is false that this exists" does not have existential import.

In order to prepare the way for certain considerations which I shall introduce, it seems to me to be desirable to consider some further preliminary points. These points are connected with propositions of the kinds "p entails q," "p is incompatible with q,"

[1] *Loc. cit.*, p. 348 ff.

and the like. It would commonly be held, I think, that "p entails q" follows from "p is incompatible with $\sim q$". I wish to inquire in detail into the connexions of incompatibility with entailing, since the points involved are crucial. It is especially important to ascertain the conditions under which we can pass from "p is incompatible with $\sim q$" to "p entails q". It should be explained that I am employing the term "incompatible" quite strictly. Thus, let p be an arbitrarily assigned proposition, and consider p in relation to the proposition $(x)fx \,.\, (\exists x)\sim fx$. It cannot be the case that both of these propositions are true, since the latter alone is impossible; but I should not say that p is incompatible with this latter proposition. Whereas, I should say that both "*this* lacks f" and $(\exists x)\sim fx$ are incompatible with $(x)fx \,.\, (\exists x)\sim fx$. Thus I am not holding that propositions cannot be incompatible with impossible and necessary propositions, but simply that from the fact that two propositions cannot both be true it does not follow that they are incompatible.

There are two classes of propositions with which we are concerned, namely, general propositions and singular propositions. General propositions are propositions which assert with regard to properties that they do or do not have instances which are true, and singular propositions are instances of properties. Now properties are divisible into two classes, namely, those properties which involve at least one individual as a constituent, and are thus existentially dependent upon one or more individuals, and those properties which do not involve individuals as constituents, and are thus existentially independent of individuals. We may say of a property which is existentially dependent upon at least one individual that it is a relational property. Thus $g(x, a)$ is a relational property of the form fx, since it involves at least one individual. We may say of a property which does not involve any individuals that it is non-relational. These terms may be applied also to functions which involve more than one variable. Thus $g(x, y)$ may or may not be a relational function.[1]

There are certain occasions on which we can not pass from "p is incompatible with $\sim q$" to "p entails q". Let fx denote a non-relational property. Then it is clear that the proposition $(x)fx$ is incompatible with the proposition "It is false that *this* has f," *i.e.* with $\sim fa$. But fa does not follow from $(x)fx$, since fa entails $(\exists x)fx$, whereas $(x)fx$ does not entail this consequence. However, if f is a relational property involving a, then it seems to me clear that fa does follow from $(x)fx$. Thus $(x) \,.\, g(x, a)$ entails $g(a, a)$. On the other hand, if f is a relational property, but does not involve a, it seems to me that fa does not follow from $(x)fx$. Thus $(x) \,.\, g(x, b)$ does not entail $g(a, b)$. In each of these cases, however, $\sim fa$ is incompatible with $(x)fx$. In general, whatever propositions

[1] This latter is perhaps an unfortunate usage, but I think it will not cause confusion. The term 'relational property' is, I believe, due to Prof. G. E. Moore.

p, q may be, I think that p does not entail q if q involves as a constituent some individual not occurring in p, though often, in such a case, p is incompatible with $\backsim q$. Consider general propositions. It is always true that $(x)fx$ entails $\backsim(\exists x)\backsim fx$, whether f is relational or not, since f occurs in both the antecedent and the consequent. But we may have $(x)fx$ incompatible with $(\exists x)\backsim f'x$ without having "$(x)fx$ entails $\backsim(\exists x)\backsim f'x$". This will be the case if f' is relational and involves some individual not occurring in f. In the case of singular propositions, it is clear that two of these propositions cannot be incompatible unless they involve at least one individual in common; and I should say that q cannot follow from p, where p and q are singular propositions, unless every individual of q occurs in p, though incompatibility often arises when this is not the case. Thus, fa is incompatible with $\backsim fa \,.\backsim fb$, but fa does not entail $fa \vee fb$, though it does entail fa.[1]

The foregoing points are concerned with conditions under which we can not pass from "p is incompatible with $\backsim q$" to "p entails q"; and although I think that all of these points are right, I should like to point out that they are not necessary to the arguments to be adduced subsequently; they are introduced merely to make clear points which are necessary, namely, those concerned with the occasions on which I hold that we *can* pass from "p is incompatible with $\backsim q$" to "p entails q". Now I think that we can pass from "p is incompatible with $\backsim q$" to "p entails q" if q does not involve any individual not occurring in p. General propositions which are constructed on non-relational functions are not existentially dependent upon individuals; and in the case of these propositions "p is incompatible with $\backsim q$" always entails "p entails q". Moreover, if f, f' are non-relational properties, it seems to me certain that "fa entails $f'a$" follows from "fa is incompatible with $\backsim f'a$". It will be seen subsequently that we can avoid relational properties and relational functions altogether. Now it is obvious that we can always pass from "p entails q" to "p is incompatible with $\backsim q$" without any restrictions. Accordingly, let p, q denote any propositions whatever. Then I am holding that p *entails* q *if, and only if,* p *is incompatible with* $\backsim$q, *and it is false that there is an individual* a *such that* q *is existentially dependent upon* a *and* p *is existentially independent of* a.

A proposition is said to be an impossible proposition when, and only when, it is such that it could not be true. A proposition is said to be contingent when, and only when, it is such that it could be true and could be false. It is clear that, if p is incompatible with $\backsim q$, the proposition $p \,.\backsim q$ is impossible. But the converse

[1] This view is not incompatible with any accepted logical principle. It is true that $(p, q) : p \,.\supset . p \vee q$; and the stronger proposition "There could not be propositions p, q such that it is false that $p \,.\supset . p \vee q$" is true as well. But it seems clear that, for example, the proposition "I am ill" does not necessitate the proposition "You are ill or I am ill," though it is incompatible with the proposition "Neither of us is ill".

does not hold. For if p is an impossible proposition, $p \,.\, \backsim q$ is impossible, no matter what $\backsim q$ is; but it is obvious that these propositions need not be incompatible in any proper sense. Of course, a precisely similar situation arises when $\backsim q$ is impossible.[1] But when both p and q are contingent, it seems clear that "p is incompatible with $\backsim q$" follows from "$p \,.\, \backsim q$ is impossible".

Thus, we can always argue from "p entails q" to "$p \,.\, \backsim q$ is impossible"; but in general we can not reverse this. However, if p and q are contingent, and if q does not involve any individual not occurring in p, and if $p \,.\, \backsim q$ is impossible, we can conclude that p entails q. This is a sufficient condition of "p entails q"; but I think that it is not a necessary one.

We say of a function fx that it is a contingent function when, and only when, it is such that it could have an instance that is true and could have an instance that is false. We say of fx that it is an impossible function when it is such that it could not have an instance that is true. We speak also of entailing and of incompatibility in connexion with functions. If fx entails $f'x$, it is clear that fx is incompatible with $\backsim f'x$; and it is clear that we can argue from "fx is incompatible with $\backsim f'x$" to "$fx \,.\, \backsim f'x$ is impossible". Suppose that $f'x$ is not existentially dependent upon any individual, that is, that it is not a relational property. In this case we can argue from "fx is incompatible with $\backsim f'x$" to "fx entails $f'x$". On the other hand, even if $f'x$ is a relational property, it follows that fx entails $f'x$ if every individual of f' occurs in f. Again, if fx and $f'x$ are contingent, "fx is incompatible with $\backsim f'x$" follows from "$fx \,.\, f'x$ is impossible".

Let fa denote an instance of fx. Then if fx entails $f'x$, fa entails $f'a$; if fx is incompatible with $f'x$, then fa is in compatible with $f'a$; and if $fx \,.\, f'x$ is impossible, $fa \,.\, f'a$ is impossible. I think that the converses of these implications hold as well, but I shall have no occasion to use these converses.

To assert with regard to a function fx that it has at least one instance which is true, or at least one instance which is false, is to assert a particular proposition. A universal proposition is logically equivalent to the denial of a particular proposition; at least, if there are universal propositions which are not logically equivalent to denials of particular propositions, they are not in question here. These propositions, universal and particular, are propositions in extension. Now it is clear that we have no way of knowing with certainty that a given particular proposition is false (*i.e.* that a universal proposition is true) except by knowing that there could not be an instance of the function involved which is true. Thus, in addition to a proposition which asserts that there is no instance of fx which is true, we have a proposition which asserts that there could not be an instance of fx which is true. This is a proposition in intension. It is clear that $\backsim(\exists x)fx$ follows from "fx is impossible,"

[1] *Cf.* C. I. Lewis, *A Survey of Symbolic Logic*, ch. v, on strict implication.

but not conversely; and, of course, "fx is possible" follows from $(\exists x)fx$, but not conversely. $(\exists x)fx$ entails $(\exists x)f'x$ if, and only if, fx entails $f'x$; and, of course, $\backsim(\exists x)f'x$ entails $\backsim(\exists x)fx$ if, and only if, fx entails $f'x$.

We have now to consider the view that there are singular propositions without existential import. It is advantageous to approach singular propositions through their connexions with functions and general propositions, for the reason that some functions and some general propositions, both universal and particular, are not existentially dependent upon individuals. A function fx, which does not involve any individual as a constituent, is quite independent of any instances, true or false, that it may have; and $(\exists x)fx$ would be significant, and false, if there were no instances of fx; and $\backsim(\exists x)fx$ would be true.

Consider two propositions, "a has f" and "It is not the case that a does not have f". These propositions are instances, respectively, of the functions "x has f" and "It is not the case that x does not have f". According to the view we are considering, these functions must be different. Moreover, general propositions, universal and particular, arise from each of these functions. I will adopt Mr. Chadwick's notation at this point, and write $!fa$ in place of "a has f," and fa in place of "It is not the case that a does not have f". It is held that $!fa$ has existential import, whereas fa does not; and thus that $!fa$ does not follow from fa, though fa follows from $!fa$.

In the first place, let f denote some contingent, non-relational property. Then clearly fa and $!fa$ are contingent. Consider the property $fx \,.\backsim !fx$. I think that this is an impossible property. Surely there could not possibly be an instance of this function which is true. But each of the functions fx, $\backsim !fx$ is, by hypothesis, contingent. It follows that fx is incompatible with $\backsim !fx$. Now $!fx$ is contradictory to $\backsim !fx$. Accordingly, fx entails $!fx$. Thus fa entails $!fa$. If this should be right, it would be fatal to the view we are considering. I do not see how it can be denied that $fx \,.\backsim !fx$ is an impossible property. There might conceivably be no instances of this property at all, but it is plainly inconceivable that there should be an instance which is true. But if there could not be a true instance of this function, this fact can not be due to any internal feature of the constituent functions separately, since these functions are contingent; it must be due to the fact that fx and $\backsim !fx$ are incompatible. It follows that fa is incompatible with the falsity of $!fa$.[1]

Contrary to what appears to be the case, the argument just adduced applies to relational as well as to non-relational functions. For suppose f to be a relational function. Then we can discard from f all constituent individuals, and obtain a function not existentially dependent upon any individual. This derived function will not take subject-predicate propositions as instances; but it is

[1] It is really unnecessary to restrict f to non-relational functions here, since f always involves every individual which occurs in $!f$.

clear that there is nothing in the argument presented which requires that the function in question be such as to take subject-predicate propositions as instances. Thus the argument tends to show that all contingent singular propositions have existential import.

I wish now to consider some consequences of Mr. Chadwick's view which arise from its bearing on general propositions. If we are to distinguish between fx and $!fx$, then we have the four particular propositions,

$$(\exists x)\ !fx, \qquad (\exists x)fx,$$
$$(\exists x) \backsim fx, \qquad (\exists x) \backsim !fx,$$

together with four universal propositions which arise from the application of $\backsim$ to each of these. These eight propositions must be held to be distinct. Instances, true or false, of the functions which occur in the two propositions on the left have existential import; whereas, instances of the functions which occur in the propositions on the right are held to be without existential import.

In the present case, f is not to be restricted to contingent functions, though we may, without loss of generality, suppose f to be not existentially dependent upon any individual. Now it is clear that $\backsim(\exists x)\ !fx$, *i.e.*, there is no instance of $!fx$ which is true, is without existential import if f is a non-relational property. This proposition would be true if there were no instances of $!fx$, since a proposition which asserts merely that there are no instances of a certain kind neither asserts nor implies that there are instances of some other kind. It is equally clear, I think, that $\backsim(\exists x)fx$ is without existential import. Surely, if there were no instances of fx this proposition would be true. Now it is plain that if there were no individuals, there would be no instances of fx, since x denotes individuals. Accordingly, $(\exists x)fx$, which asserts that there is at least one instance of fx, is incompatible with the proposition "there are no values of x". But "there are no values of x" is properly contradictory to "there is at least one value of x". Hence $(\exists x)fx$ entails "there is at least one value of x," *i.e.*, has existential import. Since $(\exists x)fx$ has existential import, it is logically equivalent to $(\exists x)!fx$. It follows that the contradictories of these propositions are logically equivalent; that is, that the propositions $\backsim(\exists x)fx$ and $\backsim(\exists x)!fx$ are logically equivalent. Thus, according to the view we are considering, although we have fresh general propositions, these propositions do not involve fresh logical force.

Now $!fa$ entails $(\exists x)!fx$. Similarly, it would seem as if fa entails $(\exists x)fx$. But since $(\exists x)fx$ has existential import, this must be denied. This seems to me to be a serious consequence of Mr. Chadwick's view. But I think that the situation is not rendered more acceptable if we hold that $(\exists x)fx$ does not follow from fa. If we hold this, then we must hold that fa is not incompatible with $\backsim(\exists x)fx$. Hence we must hold that a universal proposition is not incompatible with instances to the contrary.

We may consider singular propositions directly, leaving aside all reference to functions and general propositions. If fa does not

entail $!fa$, then fa is not incompatible with $\backsim !fa$. It is not necessary to restrict $!fa$ to propositions which do not involve any individuals other than a, since in any case every individual which occurs in $!fa$ occurs in fa. Suppose fa to be a contingent proposition. Then it must be held that $fa \,.\backsim !fa$ is not an impossible proposition; whereas, it seems clear that $fa \,.\backsim !fa$ could not possibly be true.

I wish to point out that the foregoing considerations are not affected adversely if we hold that singular propositions without existential import are to be analysed as disjunctive propositions; that is, if we hold, for example, that "It is not the case that a has f" is to be rendered, "It is not the case that a exists, or a does not have f". In this case we can form a function of which this latter proposition is an instance, and we can derive general propositions from this function. It is clear that the arguments adduced do not presuppose that fx is not a disjunctive function. Moreover, much of what has been said applies to general propositions, as well as to singular propositions and elementary functions of singular propositions. What has been said suggests the view that all general propositions which are constructed on relational functions, as well as all singular propositions and elementary functions of singular propositions whatever, are such that there are no propositions properly contradictory to them.

C. H. LANGFORD.

PROFESSOR MACIVER'S CRITICISM OF THE IDEALISTIC THEORY OF THE GENERAL WILL.

I WAS permitted some time ago by the Editor of MIND to publish three articles on "Recent Criticism of the Idealistic Theory of the General Will". Since then Mr. R. M. MacIver's book on the *Modern State*[1] has appeared and added another brilliant page to the volume of British political philosophy. His theory is founded upon the distinction, already familiar to the readers of his book *Community*, between society and the areas within it which he calls communities (city, village, nation, etc.), associations or the organisations established for the achievement of conscious and therefore limited purposes (*e.g.* family, church, party), and institutions or the recognised modes in accordance with which communities and associations regulate their activities (such as inheritance, baptism, the party machine). Among these the state takes its place as an association distinguished from society in general and from particular associations by certain peculiar characteristics. This distinction only calls for remark here in so far as I believe that the writer tends to exaggerate its newness and exclusiveness. The distinction between society and the state in modern theory is as old at least as Locke, to whom the writer curiously enough attributes the fallacy of "reducing society to a mere system of consentient wills" (p. 445). Is there not likewise a certain arbitrariness in suggesting that the family or the church is not an "institution," and that the village or the city may not be organised as a real association? Mr. MacIver of course admits this ambiguity but the relativity of these distinctions becomes of the first importance when we come to the state and the ancient as well as the modern use of the word for the community associated for particular, though, as he himself constantly emphasises, particularly inclusive ends. We are here concerned with what he says of the general will to which it is one of the chief merits of his book to have assigned a central place.

It is the essence, he tells us, of every association to be united by a common purpose. A business corporation, for example, has a body of shareholders "who are united in the will and the interest to uphold the corporation". Mr. MacIver attempts no psychological or philosophical analysis of what is meant by a general as contrasted with a particular will, or again of a general attitude of will as contrasted with particular actual volitions, and we think that his work suffers from this omission when he comes to the criticism of theories

[1] *The Modern State*, by R. M. MacIver (Oxford, 1926).

which are based on just such an analysis. But we are grateful to him for not starting, as so many with whom he otherwise agrees have done (thereby stultifying themselves) with the simple denial of the reality of anything corresponding to what philosophers have meant, and for several interesting applications of the doctrine as he expounds it.

It enables him to make the important distinction between the will of the people and the general will. While the will of the people is "defined by that capricious element which veers with every political wind that blows," and wins its way through struggle and opposition, the general will, being "not the will for a policy but the will for the state, the will that identifies a citizen with all that he divines of the meaning and service, tradition and promise of the state," is "deeper and stronger than the immediate aims of men. It is the deep sea of devotion which knows nothing of the waves that rock the surface of politics. Because of it this shifting marginal sovereign, which we name the will of the people, is entrusted with a dominion far more steadfast than its own nature can ever secure" (p. 200). While the general will is thus excluded from the determination of policy, it ought nevertheless to be active in the determination of government. It is only thus that the purpose of the state as the well-being of the whole can be permanently kept in sight and the state itself as a democratic or welfare system be sustained. For democratic states are just those in which the general will is coextensive with the community as a whole or at least the greater portion of it; dynastic or power states, those in which there is either "no general will coextensive with the community embraced within the state or in which the general will is merely acquiescent or subservient". Apart again from the somewhat arbitrary distinction between the determination of government and the determination of policy (reminding one of Rousseau's jibing criticism of English liberty as confined to the day of election), this account falls easily into line with idealistic theory. In view of it one would have expected a more sympathetic treatment of the idealist writers who have done most to prepare the way for it. That Mr. MacIver reserves these for some of his severest criticisms is due partly to his personal aversion to mixing up political theory with philosophical analysis and partly to a deeply-rooted suspicion of the practical consequences of metaphysical, or as he calls them, "mystical" conceptions of the state.

Under the heading "The State as a Mystical Unity" the Contractualist theory is given the credit of "removing from the institutions of law and government the beclouding mystery which set their worth apart from their function," whereas idealist writers are accused of having sought to restore the mystery—*not*, like Burke, by appealing "once more against reason to tradition and religion," or like mediæval theorists and moderns such as Spencer and Schäffle, by the dangerous analogy of the physical organism, but by turning to mind and personality for a true representation of the state. This

we are told finds its fullest expression in Hegel to whom the state is a living person: "Its unity is in its own self-consciousness. It is a collective person, a majestic being, a sort of God whose thoughts are not our thoughts and whose ways are not our ways. We speak of the mind or the spirit of a people, meaning thereby the common qualities of mind or spirit which they reveal. But Hegel is not thinking of common qualities, or attributes shared by like-natured beings. He thinks of a mind that animates the whole body of a nation, that guides and governs it, a mind that is more real than the minds of its members, that works in history towards the fulfilment of its own purpose. Individuals are merely its temporary instruments. How this mind is related to the minds we know, remains a mystery. How it is to be identified with the state is a mystery still more inscrutable. Hegel's recent disciple, Bernard Bosanquet, strove to show that the will of the state is the 'real' will of its members, even though their actual will is at odds with it. But even if we accept the extraordinary Hegelian identification of the rational with the real, we are no nearer understanding how the *de facto* will that undertakes the business of government is invested with superior rationality. If it is not, the real will of the state is something else than the will of the government and so becomes curiously unreal."

I have quoted this passage at length to show how little a writer who admits the reality of a general will can afford to neglect the "metaphysical" basis on which it rests. With regard to Hegel, it is perhaps fair enough to read such phrases as "the footstep of God upon earth" (as applied to the state) in a mystical sense—though not more so than any other language that implies the belief in an over-ruling Providence in the development and the history of states. But it would be difficult to find in him any phrase which justifies attributing to him the doctrine that the state is a living person with "its own self-consciousness" outside and independent of the wills of individuals. The whole essence of the Hegelian theory is the distinction, to which any doctrine of the reality of the general will commits its supporter, between the will that is governed by merely private interest and may accidentally be united with others equally private, and the will or conscience that recognises the claim upon it of the deeper (if obscurer) interest of the whole and is inherently one with others. Any "mystery" that attaches to this distinction (virtually that between the abstract and the concrete universal) for the student of Hegel's logic is a self-made one. If it is true that Hegel overlooks the possibility of any wider organisation than that of the state in which a general will may find embodiment and refuses to recognise its operations in the narrower organisations of family or civic or economic corporations,[1] this is the result of the historical circumstances in which the Prussian state found itself at the time. It is only by a similar misunderstanding that Bosanquet

[1] See, however, what he says, after Schiller, of world history as the world's judge, and of these more elementary associations, in the Philosophy of Right.

can be interpreted as teaching that "the *de facto* will that undertakes the business of government is invested with superior rationality". There is no point on which Bosanquet is more insistent than that the general will is not to be sought for in isolated votes or in particular governments that may be established by them but rather in the general spirit of the whole complex of the institutions in which the national life has embodied itself. There can be no true understanding of the idealistic theory of the general will as it has taken root in British writers from Coleridge to Green and from Green to Bosanquet, nor any fair criticism of it, until the threefold distinction that underlies it between the working apparatus of government, the complex of institutions and understandings, in other words the "constitution," which may be said to govern the government, and the underlying will that seeks to maintain through these the "natural rights" (in modern phrase the "personality") of the man and citizen and in its turn may be said to govern the constitution—is understood and appreciated. Mr. MacIver has himself made a notable contribution to this understanding in his suggestive discussion of the distinction between state and constitution and again between the constitution and the will behind it, the "unseen master builder of society that maintains the state and learns" (is gradually learning?) "also to assign it its place".

It is all the more surprising that he should seek to make a mystery of the distinction between the "actual" and the "real" will of communities and the citizens who compose them that underlies the whole theory. If writers who like him admit the reality of a general will in society yet seek to purge political philosophy of metaphysics object to this terminology they may be invited to supply us with a better to indicate the relation between what a community actually wills and the consciousness of what it ought to will in harmony with the principles it has sought to embody in its constitution, when these are in conflict with each other. The "metaphysical" phrase has at least the advantage of the analogy it suggests between the life of society and that of the individual where the distinction has from the times of Plato and St. Paul been a commonplace of moral reflection. If, as his criticism of the idealistic theory seems to suggest, Mr. MacIver rejects the analogy, he ought logically to reject the whole terminology of the will, his use of which is the distinguishing merit of his book.

The criticism for which his account of the idealistic doctrine is a preparation is summed up in the two points: (1) that it "confuses the state and the community," (2) that it commits the fallacy of "interpreting the unity of the whole as though it were exactly correspondent to the unity of its members or components". After what has already been said it is hardly necessary to enlarge upon either. With regard to the first it is difficult to see how it applies to a treatment of society such as we have in Hegel's Philosophy of Right, founded as that is precisely on the different elements or aspects of civilised society (Family, Free Society and the State). It would be

truer to say that Hegel was the first to make this fundamental distinction clear while at the same time trying to indicate the organic relation between these different elements. On the other hand it is just the hardness of the line that Mr. MacIver seems to draw between the community and the state that leads to a certain vacillation in his own treatment of the latter, alternately depreciating and deferring to it, that is apt to puzzle his readers. At one time the state has the total well-being of the community assigned to it, at another it has strictly limited objects; at one time it is society organised for its own welfare, at another it is a mere instrument for something beyond itself; at one time it is the embodiment of the general will and presumably partakes of its unity, at another it has no unity of its own, but receives it from without or possesses it in a secondary form.

The answer to the second criticism is contained in what has been already said of the sense in which the theory can be said to attribute personality to the state. But again it invites the counter criticism that Mr. MacIver cuts the ground from beneath his own theory when he suggests that, given the real whole, which he supposes a community to represent, it may be something so entirely different from its members that its structure fails to reflect their essential features. It is true (to take his own examples) that a grove of trees is not a tree nor a colony of animals an animal; but if we are invited to take the grove and the colony for the analogies that are to replace that of the "organism" some of us may prefer the latter as at least carrying us beyond the idea of a physical aggregate. Mr. MacIver's third example of the atom and the system of atoms seems particularly unfortunate in view of modern theories of the atom as itself constituting a system. Be that as it may, what is fundamental in the idealistic theory of the organised community is not the personification of the state but the recognition of it as a system of co-operating wills sustained by a greater or less consciousness of the common end for which it exists—a consciousness which both ordinary language and philosophical tradition authorise us to speak of as itself a will. More is not asserted by any responsible thinker, to assert less would ruin Mr. MacIver's own theory. How far the same moral rules should govern this will in its actual operation as govern the individual will—in other words how far individuals who are acting for the community ought to apply the same standards as they would apply in private life—is one of the most difficult problems of practical ethics. But it may be worth while noticing that the writer who is reproached by Mr. MacIver with an incontinent assimilation of the state to the individual is accused by Prof. Hobhouse (here quoted with approval), of introducing unwarrantable distinctions between them. The truth of course is that while moral law applies in all its strictness to both states and individuals it does so, as all moral law does, in a different form determined by the circumstances of the case.

In the account he proceeds to give of the "practical danger" of

the philosophical theory Mr. MacIver is on safer ground. All great inclusive ideas are dangerous just because they are great and inclusive and the corruption of the best may easily be the worst. The idealist theory of the state is, as we have seen, an effort to unite identity with difference and one side or the other may easily be exaggerated. Mr. MacIver points to the danger of so exaggerating the difference as to conceive of the state as existing in its own right and having "a fulfilment which is not the fulfilment of its members," and thus opening the door to absolutism (p. 453). The extent to which Hegel fell into this error is a matter of philosophical criticism. I believe it has been greatly exaggerated. But philosophers have to bear their own burdens and one of them is that their doctrines are apt to pass into currency *in modo recipientis* rather than *in modo exponentis*. Hegel's doctrine has not escaped this fate, and writers have prophesied in his name with fatal enough results. None the less philosophy remains one thing, politics another, and it is the first duty of the philosopher to distinguish between the essential truth of a theory and the uses to which an imperfect grasp of it combined with violent prejudice may put them.

I have criticised Mr. MacIver's criticism of current idealism but I return to the positive part of his book. I believe that it would be difficult to find in idealistic writers themselves a better interpretation of their meaning than that contained in what he says of Rousseau (p. 444), whose disciples, in the sense that the author would give to his teaching, they may with him be content to be reckoned. The passage is too long to quote in a discussion of this kind. In view of it and similar passages in Mr. MacIver's book one can only say with respect to the critics of the idealistic theory of the general will, *O si sic omnes !* and with regard to Mr. MacIver himself, *O si sic omnia !*

I have not mentioned Prof. Hocking's recently published book on *Man and the State* only because instead of being a criticism of the idealist doctrine as I understand it he seems to have blessed it altogether in a statement as fresh as it is conclusive. Coming to it as he does, in contrast to Prof. MacIver, with the conviction that political philosophy requires a metaphysics as well as a psychology and an ethics, he supplements the teaching of the *Modern State* just on the side on which, as I have tried to show, it is weakest. In the appeal on the one hand to first principles in the constitution of the will, particularly in his idea of the "will circuit," and on the other in the detailed application of the doctrine to modern politcial problems nothing could be more timely. Nothing better I believe on the whole subject has been published in America.

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VI.—CRITICAL NOTICES.

The Analysis of Matter. By BERTRAND RUSSELL. Kegan Paul, 1927. Pp. viii, 408. 21s.

THIS book constitutes the complete work from which Mr. Russell's *Tarner Lectures*, delivered at Cambridge in 1926, were a selection. The introductory chapter states and subdivides the problem to be discussed. The rest of the book falls into three parts, *viz.*, (1) *The Logical Analysis of Physics*, (2) *Physics and Perception*, and (3) *The Structure of the Physical World*. In these three parts Mr. Russell raises, and tries to answer, three distinct but closely connected questions, *viz.*, (1) What is the logical structure of theoretical physics, considered simply as a hypothetical-deductive system like pure geometry? (2) How are the terms and laws of physics connected with the data of sense-perception, which are admittedly our ultimate evidence for the truth of theoretical physics? and (3) What is the most plausible view of the contents and structure of nature which will be consistent with the logical conclusions of Part I and with the epistemological conclusions of Part II?

Part I is a very lucid account of the present position of theoretical physics by an extremely competent onlooker who is able to see more of the game as a whole than the players themselves and who accompanies it with a running critical commentary. Reading it may be compared to attending a Rugby football match under the guidance of Mr. W. W. Wakefield. It should be extremely useful to those who already have some knowledge of current mathematical physics; but I doubt whether others will make much of it. This is not Mr. Russell's fault, but is inevitable from the nature of the subject.

We are first told about the pre-relativity physics; then about the fairly simple and common-sense view of the atom as consisting of planetary electrons revolving about a central positively charged nucleus. Then we are introduced to the theory of quanta, and so to Bohr's theory of the atom and its development by Sommerfeld and others. This leads on to the atomic theories of Heisenberg and Schrödinger, in which the picture of substantial electrons and nuclei fades away into mere mathematical functions requiring a special algebra of their own. Next we learn about the special and the general theories of relativity. This leads on to a discussion of the method of tensors, and to an explanation of the notions of geodesics and invariants. We are then ready to be introduced to Weyl's

theory, which bases the laws of electromagnetics on considerations of the relativity of measurement in different regions. This raises the general question of measurement, and introduces the principle that the fundamental laws of geometry and of physics must be expressible in differential equations. These subjects are discussed with special reference to Prof. Eddington's views. Then comes a chapter on matter and space, in which it is pointed out that the old sharp distinction between the two has vanished. In this chapter Mr. Russell also explains how quantum phenomena and the facts dealt with by ordinary optics and electromagnetics seem respectively to require different and inconsistent views of the nature of physical processes. Part I ends with a chapter on the abstractness of physics, in which Mr. Russell emphasises the extreme remoteness of the concepts of modern theoretical physics from anything that we can either perceive or picture in imagination. This naturally leads on to the epistemological problem of Part II.

The following points in Part I seem to be of special logical interest. (i) Mr. Russell remarks that there is a certain peculiarity in the method of tensors which suggests that it can hardly be ultimate. The object of the method is to state *intrinsic* natural laws, *i.e.*, laws which contain nothing that depends on the special system of co-ordinates used for placing and dating events. Yet, to secure this end, it has to start by assuming some set of co-ordinates or other. One cannot help thinking that there must be some less roundabout way of stating the intrinsic laws of nature. (ii) Mr. Russell points out that physicists have hardly recognised the full implications of the principle that the ultimate laws of nature are differential. Since there are no actual differentials, such laws must express the limits to which certain relations between *finitely* separated events approach as the separation between them is made smaller and smaller. He works this out in an interesting way in his treatment of measurement and its presuppositions. (iii) We are told that, apart from the facts which led to the general theory of relativity, there was no real objection to the Newtonian doctrine of absolute space, time, and rotation; but that the general theory of relativity has definitely answered the question in favour of the relational view. I do not think the matter is quite so simple as this. Of course the terms of the question are changed almost beyond recognition when we substitute space-time for space and time, and when the distinction between "empty" and "occupied" regions of space-time is made to consist in differences of "geochronometry". But I understand from a short paper by Prof. Eddington in the volume published in connexion with the Newton celebrations that the question about absolute rotation still has a meaning, and that, when interpreted in terms of tensor-theory, it has to be answered in the affirmative. (iv) Mr. Russell holds that the relativistic theory of gravitation can be stated either in terms of a homaloidal space-time with a contingent filling, or in terms of a non-homaloidal space-time with contingent variations in its

"geochronometry" from one region to another. He disagrees with Whitehead, who thinks that the former interpretation alone is right, and with Eddington, who thinks that the latter alone is right. Here, if I may venture to express an opinion, it seems to me that Mr. Russell is plainly correct; since each of these distinguished relativists has refuted the other by doing what, in his opponent's view, should be impossible.

Part II starts by considering the development of the common-sense view of the world out of more primitive experiences, and the development of the modern physical view out of that of common-sense. To the plain man the world consists of more or less permanent things, each of which has many different qualities and is the subject of varying states. And these things are believed to exist and interact in a common space and time. Now, as Mr. Russell points out, it is quite certain that this view is not primitive. We can see infants painfully acquiring it by practice before they can speak or reason. It would, of course, be a grave mistake to call the common-sense view an "inference," if this means a conclusion reached by deliberate argument, inductive or deductive, from other beliefs. But "all our intellectual processes have pre-intellectual analogues". The acquirement of conditioned reflexes is the physiological analogue of inductive argument, and this plays an essential part in forming the common-sense notion of persistent things with varying states interacting in a common spatio-temporal system. When "inference" is taken in this wide sense it is difficult to point to anything that is a pure datum unmodified by inference. But this is unimportant; for we can certainly arrange our judgments in a hierarchy in this respect, and can see that the judgment "This is a sensibly red occurrence" involves much less inference than the judgment "This is a red material object".

The only plausible criticism which might be made on this part of Mr. Russell's doctrine is the following. Everyone would admit that, unless we had had certain reflexes and the power of forming associations, and unless there had been certain sequences and repetitions in our sensations, we should not have distinguished one thing from other things or identified each thing throughout a period of time and change. But, granted that these conditions are necessary, are they sufficient? Do they suffice to generate the belief in permanent things in a three-dimensional space, or do they merely fill in the details of a general scheme of interpretation of sensible experience which is innate? I suppose, *e.g.*, that Prof. Stout would accept all the positive part of Mr. Russell's contentions here, but would hold that the beliefs of common sense cannot be completely accounted for except on the assumption of certain innate categories in terms of which the mind interprets the sensible experiences which it gets and the associations which it acquires.

In Chapter XVII on *What is an Empirical Science?* Mr. Russell asserts that distinctions of modality apply properly to propositional functions and not to propositions. To say that $\phi(x)$ is necessary,

possible, or impossible means respectively that it is true for all, for some but not all, or for no, values of x. This doctrine has been confronted with very serious objections by Prof. Moore and others; and, until they have been answered, it must be regarded as a mere *obiter dictum* of Mr. Russell's. Mr. Russell defines an "analytic proposition" in this chapter as one which can be deduced from Logic alone. He then accepts Wittgenstein's view that all propositions which can be deduced from Logic alone are tautologies, *i.e.*, statements that two different sets of symbols symbolise the same thing. If this be so, it seems strange that Mr. Russell should say on p. 174 that "we may learn from experience that $2 + 2 = 4$, though we afterwards realise that the experience was not logically indispensable". It is difficult to see how experiments with beads or counters could tell us whether two different symbols do or do not symbolise the same thing. Mr. Russell regards the adjective *a priori* as essentially epistemic; we may talk of *a priori* knowledge or belief, but not of *a priori* facts or propositions. He thinks it doubtful whether there is any synthetic *a priori* knowledge, and certain that there is none about the subject-matter of physics. There are *a priori* beliefs, and some of them are true; but their *a priority* does not guarantee their truth.

We may now consider the passage from the common-sense view of perception to that of physics. The essential change is that we abandon naïve realism in favour of a causal theory. This theory has a negative and a positive side. The negative side is that what each of us is acquainted with in sense-perception is private to himself; the positive side is that correlated percepts in ourselves and others are due to remote causes, and that some of the properties of these causes can be inferred from the qualities and relations of the correlated percepts. The arguments for the negative side are hackneyed, and Mr. Russell does not waste much time over them. The important question is whether we are justified in accepting the positive side.

Mr. Russell holds that the positive contention of the causal theory cannot be demonstrated; but, if we accept the validity of induction and inverse hypothetical reasoning, it can be made highly probable. There is, I think, a slight danger of unwittingly getting into a logical circle here. Mr. Russell does not profess in this book to deal with Induction. He feels certain that it can be justified somehow, and refers us to Mr. Keynes for details, without committing himself to complete agreement with Mr. Keynes. Now, on Mr. Keynes's view, induction can be justified only on certain assumptions about nature. In particular Mr. Keynes finds it necessary to assume a limited number of generating properties which generate the rest of the properties of objects. Now the danger which I wish to indicate is that it seems possible that something like the causal theory of perception is one of the fundamental assumptions of induction. In that case it would be circular to support the causal theory by inductive arguments. I do not say that this

is so; but, until Mr. Russell has decided what are the fundamental presuppositions of induction, he cannot be sure that his arguments for the causal theory may not be circular.

The course of the argument, on Mr. Russell's view, would be as follows: (1) Each percipient can supplement the percepts which he actually has by other correlated percepts which he would have had if he had followed up his actual percepts by certain series of sensations of movement. This is an induction from cases in which such series were actually experienced. (2) The next step is from my actual and possible percepts to the existence of foreign percepts. At this stage we can construct a common space of percipients. It will not be continuous, but we can eke it out by the notion of possible percipients. The argument here is supposed to be by analogy, and Mr. Russell thinks it a very strong one. (3) The last step is from the actual and possible percepts of myself and other percipients to events which take place where there are no actual percipients at the time. These may be qualitatively very unlike percepts. Mr. Russell holds that this third step presupposes the second and is more precarious. But he thinks that the sort of facts which physicists explain by ascribing a finite velocity to light and sound make it almost inevitable to take this step unless we are prepared to accept extremely odd and complicated causal laws. I have only two comments to make here. (*a*) When we argue to "foreign percepts," how much is to be understood by a percept? Does it mean an event which qualitatively resembles some percept of mine? If so, we shall be breaking Mr. Russell's rule that only structural characteristics can be inferred. Or does it mean an event which is related to a large number of other events in the way in which my percepts are related to each other? If so, we seem to be inferring a great deal; and one wonders whether the argument is so cogent as Mr. Russell thinks. (*b*) In so far as Mr. Russell's objection to pure Phenomenalism rests on the principle that the cause of an actual event must be actual and not merely possible, it seems open to the following query. The notions of cause and substance being so intimately connected, have we any right to assume that, when the traditional notion of substance has been so radically transformed, as it is by Mr. Russell, the traditional notion of causation will not need a parallel transformation? And can we be sure that, with the transformed notion of causation, the cause of an actual event must be actual?

The next question discussed by Mr. Russell is this. Granted that we can infer from percepts and their relations that there are actual events which are not anyone's percepts, how much can we know about the character of such events? Mr. Russell's general principle is that we can infer with high probability the structural characteristics of such events from the structural characteristics of percepts, but that we cannot infer their purely qualitative characteristics from those of percepts.

This brings us to Mr. Russell's doctrine that, from one point of

view, my percepts are inside my head, whilst, from another point of view they are outside my body. The second statement is fairly obvious. In my visual field at any moment my visual percept of so much of my body as I can see is central, and my visual percepts of other objects are arranged about this centre in various directions and at various distances. The first statement is more paradoxical. It depends on Mr. Russell's view that a percept actually *is* that event in the brain which would usually be regarded as its immediate necessary and sufficient condition. Suppose I am looking at a penny. I am aware of a brown and roughly round visual percept. Now the penny, on Mr. Russell's view, is a set of correlated percepts and other events which converge to or diverge from a certain region in physical space. This region is "the place where the penny is". Similarly "the place where my head is" is another region in physical space which is the centre of another set of correlated percepts and other events. And the event which is my percept of the penny is an event which takes place inside the latter region. Suppose you object: "If I were to open your head and look inside I should not see a brown roundish disc but a greyish mass". Mr. Russell would answer: "But what you are directly acquainted with then is an event in *your* head and not an event in *my* head". It does appear to me that most of the difficulties which strike one at first sight in Mr. Russell's view vanish when we clear up the confusions into which one almost inevitably falls.

If we now raise the question: "Are the events outside our bodies qualitatively like or unlike the correlated events in our brains?", Mr. Russell answers that the fundamental difference between the two is epistemic rather than constitutive. We know a good deal about the intrinsic qualities of certain events inside our own bodies, *viz.*, our percepts. We know comparatively little about their laws. We know a good deal about the laws and structure of external events, but nothing for certain about their intrinsic qualities. There is, however, no reason why external events should not resemble percepts in their intrinsic qualities, and no reason why they should. We are therefore free to ascribe, as an hypothesis, just as much and just as little qualitative resemblance as we find most convenient.

The remaining point of special interest in Part II is Mr. Russell's view of substance. He accepts the distinction between substantives and adjectives as irreducible, and admits the existence of substances, in the sense of existent substantives. But he thinks that there is no ground to believe that what are commonly counted as persistent substances, *e.g.*, tables or electrons, really are existent substantives. The only existent substantives that we have any good reason for accepting are short-lived events. What is ordinarily called a substance is a set of successive events connected by a purely immanent causal law, such that the positions and qualities of the later events could be inferred from those of the earlier events. The law may be such that the successive events of the set form a line in

space, or such that they form a series of concentric spheres. An electron would be an example of the first kind, and a light-wave of the second. It must be noted, however, that substances, so defined, are ideal limits rather than actual existents, since there is constant interaction in the world. The real position may be expressed roughly as follows. The actual characteristics of any event may be inferred by supposing that there were several substances, A, B, C . . ., in the sense defined; and that this event had belonged to all of them. Its actual characteristics will then be found by superposing on each other the characteristics which it would have had if this supposition had been true. Generally the characteristics of this event will be to a first approximation as they would have been if it had belonged to A, *e.g.*, alone; and B, C, etc., will need to be introduced only for modifications of detail. We then say that the event "occurs in" A, but is in part "determined by" B, C, etc.

Part III is much more technically mathematical than the rest of the book, and it is hardly possible to give an intelligible brief account of its details. The object is to suggest hypotheses about the ultimate stuff and structure of nature which shall do justice both to the latest developments of theoretical physics and to the epistemological results of Part II. It is admitted by Mr. Russell that the conclusions here are tentative, for two reasons. Theoretical physics are still in a state of flux on fundamental questions; and, even if we took one particular view of quantum and relativity phenomena, many alternative hypotheses about the stuff and structure of nature might equally do justice to it and to the epistemological results of Part II.

The main points of Part III are the following: (1) Mr. Russell, whilst paying the highest tribute to Prof. Whitehead's absolutely fundamental work on the definition of points and instants in terms of volumes and durations, finds one defect in it. Whitehead assumes that every event contains within it events of smaller spatio-temporal dimensions; *i.e.*, that there are no minimum events. It would obviously be advantageous if this limitation could be removed, and points and instants could be defined by some method which would work equally well whether there were or were not minimum events. Mr. Russell outlines such a method, and there seems no reason to doubt that it is correct in essentials. (2) Proceeding on these lines, Mr. Russell shows how to construct a space-time which shall answer to the requirements of *Analysis Situs*. (3) To pass beyond this to metrical properties he considers that it is necessary to introduce causal considerations. Here he deals with the conception of Interval, and tries to give a physical meaning to it which shall account for the otherwise rather mysterious physical importance which it plainly possesses. (4) The other conception which is also of the utmost physical importance is the Quantum. Now this appears to be specially connected with periodic changes. Mr. Russell therefore gives an important and interesting account of the real meaning of periodicity. He suggests that, in view of relativity

considerations, on the one hand, and of the later theories of the atom, on the other, we cannot rest content with the notion of periodic *motion* as fundamental. Qualities, which have so long been banished from theoretical physics, must be re-introduced; and the fundamental fact of periodicity will be the rhythmic repetition of certain series of qualities. In this connexion Mr. Russell draws a distinction between "steady events," "rhythms," and "transactions". Transactions are connected with quantum changes, like radiation and absorption of energy. The distinction between rhythms and steady events may be compared to Prof. Whitehead's distinction between "non-uniform" and "uniform" objects.

In this review I have necessarily omitted many interesting points in Mr. Russell's book, for it is singularly full of what he will no longer permit us to call "matter". But I have perhaps succeeded in making clear to the reader that it is a most important contribution to the philosophy of modern physics by one of the very few writers who possess the peculiar combination of gifts and acquirements which are needed if one is to write intelligently and intelligibly on the subject.

C. D. BROAD

Duns Scotus. By C. R. S. HARRIS. Oxford: Clarendon Press, 1927. 2 vols. 8vo, of ix-380 and 401 pages. 42s.

THE object of Dr Harris' work is a twofold one: firstly, to give a general survey of the philosophy of Duns Scotus; secondly, to establish that the teaching of Duns Scotus represents more truly than Thomism the culminating point of Latin scholasticism: "It is in him," Dr. Harris says, "rather than in the Angelic Doctor, that the scholastic philosophy reaches the highest point of its development. Notwithstanding the fact that he never left behind him a finished and well-rounded system like that of Thomas, he shows a wider range of thought and a greater degree of consistency, and above all a far deeper appreciation of the philosophical needs of Catholic Christianity, than his more famous rival" (I, p. 267). In order to justify this last conclusion, Dr. Harris has tried to accumulate all possible sorts of evidence. Thomism, in his two volumes, is very easily disposed of and it would be difficult to discuss his assertions precisely, because they are nothing but assertions. Scotism, on the other hand, has been very carefully studied. Dr. Harris not only knows all the printed texts attributed to Duns Scotus, but he contributes himself two hitherto unpublished fragments of the Subtle Doctor (II, pp. 361-398), thus enriching our knowledge of his thought. It is therefore necessary to look attentively at the facts on which this new interpretation of Duns Scotus is grounded, in order to see whether or not they are firm enough to support his interesting conclusions.

Let us say at once that if the main thesis of his work cannot be

considered as demonstrated, it is owing to the fact that Dr. Harris has never been quite sure which works belonged to Duns Scotus and which ones were simply spurious. A remarkable instance of this fact is his treatment of the *Grammatica speculativa*, traditionally attributed to Duns Scotus. In the very careful chapter devoted to Duns Scotus' life and works, we read of that treatise that "the numerous references to doctrines contained in Duns' logical works leave us in little doubt as to its authenticity" (I, p. 22). In accordance with this conclusion we read later on that "the interest which Scotus shows in the scientific study of language as exemplified in his *Grammatica speculativa* may also be attributed to the influence of the Oxford School, namely of R. Grosseteste and Bacon" (I, p. 135). Now, after writing and even printing his book, Dr. Harris chanced to read an article of Mgr. Grabmann: "Die Entwicklung der mittelalterlichen Sprachlogik" (*Phil. Jahrb.*, 1922), which, according to Dr. Harris himself, "brings very strong evidence to show that the author was not Scotus but Thomas of Erfurt" (I, p. 37). What then becomes of the influence exerted by the Oxford School on Scotus it is very difficult to say, at least so far as this particular point is concerned.

It is a well-known fact that the last two books of the *Quaestiones subtilissimae in metaphysicam Aristotelis* are no genuine works of Duns Scotus, and (see pp. 19 and 230) Dr. Harris is by no means ignorant of the fact. As to the nine earlier books, on the other hand, his own opinion is rather difficult to grasp. His first view was that, for a variety of reasons, it would be difficult to maintain "that in their present form they are the work of Duns Scotus himself" (I, p. 19); later on, he says more decidedly that "the authorship of the *Quaestiones* is, to say the least of it, doubtful" (I, p. 87, n. 2); still later on (I, p. 371) we learn that the *Quaestiones in Metaphysicam* are a work "which seems to indicate a transitional period" and, finally, Dr. Harris thinks that they "seem to mark the transition between the doctrine of the *De rerum principio* and that of the *Opus Oxoniense*" (I, p. 375), which should imply, if we are not mistaken, that their authorship is not doubtful at all. Besides, Dr. Harris is no more assured of his reasons than of the thesis they are meant to support. Whilst doubting the authorship of the *Quaestiones*, he says that they differ on several important points from the teaching of Scotus as exemplified in the two Commentaries on the Sentences: "For instance, in the first *quaestio* of the first book the author rejects the opinion of Avicenna that the subject of metaphysic is being *qua* being (*ens inquantum ens*), a thesis which is accepted in the *Opus Oxoniense* and the *Reportata*" (I, p. 19). Now it is clear that this first question is a purely controversial comparison between the two opinions of Avicenna and Averroes; we must not look to it therefore for the personal opinion of Duns Scotus, but rather to the *Quaestio* I, L. VI of the same work, where he takes sides with Avicenna, as he regularly does in every one of his other works. Prof. Harris

knew this last text, since he quotes it, I, p. 217-218, thus manifestly destroying his own earlier argument.

Nevertheless the most dangerous stumbling-block to this new interpretation of Scotism lies in the use made by Dr. Harris of the *De rerum principio*. The main contention of his two volumes, namely the superiority of Scotism to Thomism, rests on his assumption that Duns Scotus achieved a synthesis of Aristotle and Saint Augustine, marking thereby a happy reaction against the extreme Aristotelianism of Thomas Aquinas. Now, everybody who is acquainted with the contents of the *De rerum principio* will not be surprised to hear that practically all the Augustinian doctrines attributed by Dr. Harris to Duns Scotus are derived from this last treatise. And not only might this be deduced from his quotations of the book, but from his own statements. "Such is the account of our self-knowledge given in the *De rerum principio*, which is markedly Augustinian in tendency . . ." (II, p. 29); and again: "In the *De rerum principio*, which, as M. Landry has pointed out, exhibits markedly Augustinian characteristics, Scotus lays down the fundamental principles of his cosmology" (II, p. 75). Not only, therefore, did Dr. Harris never doubt the authenticity of the *De rerum principio* while writing his book, but he could not doubt it, because to doubt it would have been to doubt his very interpretation of Duns Scotus. If Scotism is a meeting-place of Augustinianism and Aristotelianism, we cannot consider as spurious the treatise where the most clearly marked Augustinian features of Duns Scotus have to be discovered. Such is the reason too, why, when he read the works of Father Ephr. Longpré and Mr. Carreras y Artau bringing very strong evidences against the authenticity of the work, Dr. Harris felt somewhat disturbed. His own volumes were already written and partly printed, so he could no longer change them. On the other hand, he clearly noticed that his acceptance of Fr. Longpré's conclusions would have amounted to a complete disavowal of his two volumes. As he himself candidly says: "to do so would alter considerably our conception of Scotus' position, and bring him more closely into line with the Aristotelianism of the Thomist School, thus missing what seems to me to be the vital interest and significance of his philosophy—namely his reconstruction of the Augustinian tradition" (I, p. 37). Rather than incur such a disgrace, Dr. Harris very naturally preferred to maintain against its new critics the authenticity of the *De rerum principio*.

Fr. Longpré's arguments against the authenticity of this work can be reduced to the three following ones: there are numerous and wide discrepancies between the doctrine of the *De rerum principio* and that of the Commentaries on the Sentences; the attribution of the *De rerum principio* to Duns Scotus is founded on a single testimony and a very late one; the likeness between the titles of the spurious *De rerum principio* and of the genuine *De primo principio* is so close a one, that it might by itself account for

that false attribution. Now, what Dr. Harris would have thought of these arguments, in case he had known them before the completion of his own book, we are hardly able to imagine. What is certain is that, reading them afterwards, he did not feel inclined towards indulgence. Against the first one, he says that: "criticism of this type may be very edifying in so far as it produces an illusion of consistency by accepting only what pleases it, but it cannot be regarded as scientific" (I, p. 375). This is the more surprising as he had himself used a criticism of this type against the authorship of the *Quaestiones in metaphysicam* (I, p. 19). Again, when Dr. Harris proposes to maintain the authenticity of the *De rerum principio* and to admit an inner evolution of Duns Scotus from an early Augustinianism in this work to a later Aristotelianism in his Commentaries, he overlooks the fact that his conclusions would be just as completely ruined on this second hypothesis as on the first one: instead of being a synthesis of Augustinianism with Aristotelianism and their blending into one system, Scotism would become the destruction of Augustinianism in the interests of Aristotelianism by Duns Scotus himself; instead of marking a reaction against the extreme Aristotelianism of Aquinas, Scotism ought to be considered as a reaction of that very Aristotelianism against the early Augustinianism of Duns Scotus himself: the triumph of Thomas Aquinas.

Concerning the second argument, Dr. Harris does not deny that the manuscript evidences in favour of the authenticity of the *De rerum principio* are very scarce, since there is only one; but as it is now a traditional one, he sticks to it (I, p. 374). Unfortunately, since the articles of Fr. Longpré and Mr. Carreras y Artau, F. Delorme, O.M., has brought forward fresh evidence for the spurious character of the treatise. According to his researches (F. Delorme, Le Cardinal Vital du Four. Huit questions inédites sur le problème de la connaissance: *Archives d'histoire littéraire et doctrinale du moyen âge*, Paris, J. Vrin, 1927), a part of it at least ought to be attributed to the minorite Vital du Four, so that instead of being the meeting-place of two traditions, Dr. Harris' Duns Scotus ought to be rather considered as an accidental combination of two men into one, which is of course widely different.

As to the third argument of Fr. Longpré, Prof. Harris judges it rather severely. "Fr. Longpré thinks that the subscript is due to a mistake of a librarian who has confused the *De rerum principio* with the *De primo principio*, but this is not very probable, because the *De primo principio* is a much shorter work and is not in the form of *quaestiones* at all . . . " etc. (I, p. 365). All this is very true, but since we know for other reasons the *De rerum principio* to be spurious, the confusion between its title and the title of the *De primo principio* remains the best possible explanation of its false attribution to Duns Scotus, which is all that Fr. Longpré intended to prove by his argument.

For these various reasons we are bound to consider the Duns

Scotus of Dr. Harris as a composite picture, whose features are borrowed from at least two distinct models. We do not say that there is no Augustinianism in Duns Scotus, but that it is certainly not the Augustinianism of the *De rerum principio.* We do not deny the superiority of Scotism to Thomism—which would be a dogmatic rather than an historical conclusion—but we deny any value to the reasons on which Dr. Harris' conclusion is grounded, since what he prefers to Thomas Aquinas in Duns Scotus does not really belong to Duns Scotus. Let it be said, finally, that we do not cast any personal blame on Dr. Harris for his fundamental mistake; his work has been done in a very careful and very scholarly manner. What has to be blamed is the perfectly incoherent and inorganic state of our mediæval studies, which makes it at present impossible to keep abreast of the literature of the subjects we are studying. So long as remedies have not been applied to this state of things, every one of us will be exposed to the same mistakes; but to consider what the remedies should be, would be quite another question.

ETIENNE GILSON.

General Theory of Value, its Meaning and Basic Principles construed in terms of Interest. By RALPH BARTON PERRY. Longmans, Green & Co., New York and London, 1926. Pp. xvii, 702. 25s.

IN this impressive volume Prof. Perry has set himself to provide a comprehensive survey of the whole field of Value as he conceives it, which cannot fail to become an object of study and a source of instruction for all future writers on this important subject. His aim has been exhaustiveness and his method psychological description. This procedure naturally lends itself to, and even positively demands, minute examination and abundance of distinctions, as Prof. Perry himself recognises. He equips his work with an apologetic preface which "realises that what I have here in some measure set in order is adjoined on all sides by thickets abounding in monstrous doubts and difficulties. There are complications which I have not followed out, assumptions which I have not followed back, and afterthoughts which I can already anticipate." He promises also a sequel, to be entitled *Realms of Value*, which "will deal with the varieties and types of that same 'value' whose generic nature, whose meaning and basic principles, are herein set forth." And in a final *Postscript* he remarks that "the pyschological classification, standing alone, tends to be excessively detailed and schematic. Interest has so many aspects and ramifications that it is impossible to exhaust its varieties. Classifications of this type are too easy to make and too likely to prove barren when they are made" (p. 694). These remarks are not put forward by way of self-criticism, but they should have a beneficial

effect upon critics otherwise disposed to echo Lotze's complaint about the tediousness of for ever sharpening a knife with which one has no intention of cutting anything, and the admirable caution of the canny Scot who would not admit that 2 + 2 = 4 until he knew what use would be made of the admission.

Such criticisms, however, would not really apply to Prof. Perry's book. It is true, no doubt, that Prof. Perry, ever mindful of the sociological connexions of ethics and psychology, has sometimes cast his net very wide and with an amplitude of sweep that brings in topics which it was not perhaps absolutely necessary to include; it is true also that his book does not, despite its size, terminate in a set of sharp-cut conclusions and solutions of all the questions that may be asked about values in general. But the reader should bear in mind that the book is planned as a portion of a larger whole; and I for one shall look forward to its continuation in the *Realm of Values* with the greatest interest and readiness to receive instruction. For I have found that Prof. Perry usually takes a very sensible view and urges it with moderation and skill, and that I can generally adopt his contentions. His main thesis, that Interest is the psychological stimulus to valuation and the clue to the whole subject of Value, he seems to me to make out completely and successfully; I would agree also that it is not possible (and scarcely necessary) to trace out all the ramifications of interest in human thought. I could wish only that he had clinched his argument by pointing out in addition that this result disposes of 'pure' thought and 'disinterested' knowledge in any strict sense of these terms.

The reflections which follow are intended less as criticisms (even of a minor sort) than as suggestions for consideration, which Prof. Perry may profitably deal with in his sequel.

(1) The first and perhaps most important of these topics for reflection is that, despite the wide range of his illustrations, Prof. Perry does not after all seem to include the whole field of values in his survey. May it not be urged that a general theory of Value should investigate not merely the moral values, but also the economic, the æsthetic, and the logical values, and discuss their relations to each other? Prof. Perry hardly refers to the æsthetic values and at times seems to refuse to recognise the logical values altogether (*e.g.*, p. 694); he practically restricts himself to the moral values. Yet he could hardly dispute that all the values have the same origin (in interest) and exhibit the same structure and the same properties. Thus in all these fields values are positive and negative, and build up into 'norms' which claim to deal not with what *is* but with what *ought* to be. In short, it seems a common characteristic of the normative sciences that they all deal with values.

(2) Even in ethics Prof. Perry seems to be thinking exclusively of the values marked by the antithesis of 'good' to 'evil'. The antithesis of 'good' and 'bad' is, I think, only mentioned once (p. 684), and that in connexion with Nietzsche. Yet the difference,

which is quite unmistakable in some examples (*e.g.*, an 'evil' spirit and a 'bad' spirit), reveals a deep-seated and far-reaching ambiguity in the meaning of 'good' which challenges further inquiry. Moreover 'good' as opposed to 'bad' does not seem to be restricted to the sphere of moral judgments. Anything from a house to a joke may be called 'good' or 'bad,' to indicate superior or inferior value of its kind.

Further, this valuation does not seem to be confined to ethics. The other values also may be conceived as 'goods' in this sense, 'wealth' being the economic, 'beauty' the æsthetic, and 'truth' the logical 'good'. Whence we may perhaps infer that *good-bad* is the generic and inclusive valuation of which the rest are specific forms; and further inquiry will suggest that its proper sense is to express *relation to purpose*—to any purpose or interest. It is disappointing to find that Prof. Perry does not say this; for he sees clearly that interest is teleological (p. 537), and from this vantage-point it should have been easy to see that it is the teleological judgment which finds expression in the good-bad valuation.

(3) Another valuation which comes off badly in Prof. Perry's treatment is the one which predicates 'right' and 'wrong'. This valuation appears to originate in the moral sphere, and properly belongs to it, though, like the other value-terms, it is often extended by metaphorical transfer to other spheres. Even in the field of ethics however it presents some interesting anomalies. It is rarer than the *good-evil* valuation, and some highly civilised peoples like the Greeks and the French appear to do without it, as their language shows. Lastly, its relations to the *good-evil* valuation give rise to fascinating problems on which it would be interesting to have Prof. Perry's opinion.

(4) Prof. Perry draws a somewhat subtle distinction between '*judgments of value*' and '*interest-judgments*,' about which I have not been able to arrive at clearness. He says (p. 612) "strictly speaking only judgments can be true or false. Values themselves, taken as relations of objects to interest, either are or are not, and judgments about them, or judgments of value, are true or false accordingly". I fail, however, to apprehend how this provides for a value-judgment in the ordinary sense, which while presupposing the existence of its object goes on to attribute a value to it which may or may not agree with other valuations, without affecting the existence of the object, or even its ('real') value. For example, if I said 'I know that pictures by Rubens are valuable, but I do not value them myself,' I should be making a value-judgment myself and disagreeing with a similar judgment made by others. Now, if I understand Prof. Perry aright, both being judgments about a valuable object are 'judgments of value' in his sense. But how can my judgment be called true or false? For all it declares is disagreement with a value-judgment. I do not value a picture by Rubens as highly as the dealers, because it is not to my taste. Which party is right in such a case, and judges truly (æsthetically),

would seem again to be a question of taste and not of fact, and not concerned with a merely existential judgment.

'Interest-judgments' are described as "those judgments about the object which mediate the interest; and these judgments, also, may be true or false. Thus a value may be either the *object* of a true or false judgment, or *founded* on a true or false judgment" (*ibid.*). I suppose this means that 'interest-judgments' are *expressive of interest* in an object, but if so Prof. Perry rather puts the cart before the horse when he declares that "the interest *depends* on the interest-judgment" (p. 613).

Finally Prof. Perry's distinction does not seem to allow for the fairly obvious fact that the predication of truth or falsity, or otherwise the truth-claim of any judgment, is *ipso facto* a value-judgment. For any judgment actually made by any one in good faith lays claim to *truth-value*. Moreover, it claims to be the *best* judgment it was possible to make under the circumstances. For evidently its maker would have made another, if he had thought of a *better;* and if he hears of a better, he will scrap his first judgment and adopt the amendment suggested.

(5) I have difficulties also with another of Prof. Perry's distinctions, which he denominates the *inclusiveness* of objects of interest. He illustrates it by the case of an imaginary Robinson who has two interests "thirst and a fondness for bathing" (p. 617). These are "functionally independent," though both may be gratified by water and although Robinson is not a sufficiently loyal American to prefer water to wine. "It follows that an object of one of these interests, such as water, derives *additional* value from being *also* the object of the other. A supply of water desired both for drinking and for bathing is better than the same supply of water desired only for drinking or only for bathing, not in the sense of being preferred, nor in the sense of being more intensely desired, but in the sense of being more inclusively desired."

Here I fail to grasp how this case illustrates the greater 'inclusiveness' of the interest in the water which has several uses. For these uses are surely *alternative* and not *cumulative*. If Robinson drinks the water, he cannot bathe in it; while if he has bathed in it, any one (even he himself) might well hesitate before he drank it. At any rate it would be paradoxical to contend that the prior use of the water as a bath enhances its value as a drink. Yet do not the words "a supply of water desired both for drinking and for bathing is *better* than the same supply desired only for drinking or only for bathing" commit Prof. Perry to this paradox? For 'better' seems to mean 'more valuable'. It is hard to believe that even the most snobbish admirer of royalty would have paid a higher price for the asses' milk in which the Empress Messalina had preserved her complexion, or the Malmsey in which the Duke of Clarence had lost his life, than for the ordinary commercial articles which were the objects only of a desire to drink.

(6) I have noticed a considerable number of misprints, though

none of importance. But Prof. Perry should correct a historical slip on page 481. It was not in 1830 but in 1873 that the Comte de Chambord finally refused to give up the *fleur de lys* in order to win the throne of France. But it was widely believed that this was merely a pretext, and that he really shrank from the perils of the job.

F. C. S. SCHILLER.

Political Pluralism. By KUNG CHUAN HSIAO, Ph.D., Professor of Political Science, Nankai University, Tientsin. London: Kegan Paul, 1927. Pp. 271, 10s. 6d. net.

THIS is a very interesting book. The author, who is fully equipped by width of reading and knowledge to deal with a comprehensive subject, may fairly claim to be able to approach its problems with fewer prepossessions than beset most European or American thinkers. He apologises indeed for "awkwardness in his use of the English language which, to him, is a foreign tongue"; but there is no need of the apology, for, although there may be a very few expressions which would not have been the most natural ones for an Englishman to employ, there is no passage in the book where any ambiguity of thought has resulted from this cause and there is nowhere any evidence that the writer is hampered, or prevented from saying exactly what he wants to say, through having to adopt a medium which is unnatural to him. It may also be added, in case any readers should feel afraid lest the work should prove to be composed in the interest of some special theory of practical politics, that there is no trace in any passage of the author having adopted a line of criticism which is unduly favourable to a particular view of a disputed point in current politics and which may be supposed to have been adopted on that account. In fact, one might read the book without having any clear idea on which side the author would be found in a political dispute: one would expect to find him ready to discuss each question on its merits, to recognise all the sides which it has and not one or two only, to be unwilling to sacrifice the interests of any group or individual. Beyond this one would find it hard to go: and this is an attitude which one is glad to be able to adopt to any writer on a question of theoretical politics. The subject is a large one, and Prof. Hsiao has made a praiseworthy attempt to deal with it as a whole. He includes a discussion of "the philosophical background of Political Pluralism," which might appear at first sight to be almost irrelevant, since Pluralism as a political theory has to be dealt with as a fact whatever its origin or affiliation may be. But Political Pluralism owes a good deal of its popularity, as the author points out, to the supposition that it is connected with, or a necessary result of, a philosophical view which has many adherents. The criticism of Pragmatism in this connexion is therefore welcome. The author is careful to point out

that his criticism is meant for a particular purpose only and is limited accordingly: but, whatever may be thought of the general arguments (which may be studied with advantage even by those who have no special political interest), the writer at any rate succeeds in showing that Pragmatism has not got so easy an answer as is sometimes assumed to the questions which may be expected to be particularly important for this purpose and that the connexion between Pragmatism and Political Pluralism is not after all very close.

Some of the chief exponents of Political Pluralism would accept with equanimity the charge of not being pragmatists: they will probably be more seriously annoyed at Prof. Hsiao's suggestion that they ought to be regarded rather as valuable critics of monism, from whose criticism a revised and improved monism may be expected to arise, than as supporters of an alternative theory which will overthrow monism altogether. Prof. Hsiao is fully aware of the dangers which may follow from an abstract monism and he is accordingly generous in his recognition of the valuable work which pluralists have performed by drawing attention to those dangers: the "emphasis upon individual freedom," the fuller recognition of the group in political thought, the "truly comprehensive view of the political process, which is to include not only government and law, but all social relations between men as many-sided moral beings," the "wholesome reaction against the paternalism and absolutism of the political state, as well as the warning against the sovereignty of any partial institution"—these are points for insisting on which we have to thank the pluralists. But the author holds that these critics have in fact insisted on matters which are already included in the best statements of the monists' view (especially in Hegel's exposition), though there is always a tendency to forget them and we cannot be reminded of them too often. To be called a Hegelian is not perhaps so offensive now as it was some years ago, but, even if the epithet be used in a sense strictly limited to one side of Hegel's views, the charge of being Hegelian which is in effect brought by Prof. Hsiao may be expected to produce surprised protests from some of those against whom he brings it.

The alternative suggestion that Political Pluralism is a practicable alternative to political monism, is rendered difficult by the fact that the writers who can be classed together as pluralists differ very considerably from one another in many important respects. In the first part of his book, Prof. Hsiao shows, by a careful examination of the most important points on which the pluralists have insisted and the answers which they have given to the questions raised, that these answers admit of great variety and that the intellectual basis and affiliations of these answers are far from being the same in all cases. For this criticism, which deals with such questions as the relation between legal and political sovereignty, the problems raised by representation, decentralisation, the general will (to name only a few), the reader must be referred to the book itself: the author is

sympathetic and his object is always to bring out the difficulty to which the pluralists are trying to supply the answer, but he succeeds in showing that the suggested answers are not always the same. More significant still is the fact that some of the leading pluralists have changed their views as revealed in their published works. It is to be hoped that it will never come to be regarded as an offence for a writer on political theory to admit that he has changed his mind, in the same way as a change of mind used to be regarded as an offence in a practical politician. But when the opinions of a political theorist undergo such important changes as some of those which are mentioned in this book, there is at least a probability that the theory which is being expounded has not yet settled down into its final form. It is easy to feel difficulties in the political theories that have been current until recently, without feeling confident that any of the alternatives that have been suggested are more free from difficulties, and without being clear what these alternatives really mean. Prof. Hsiao has certainly done good service in bringing these theories together and speaking of them as a whole and in relation to the theories which they claim to supersede. It may, however, be doubted whether pluralism is yet in a condition in which it can be criticised. In particular, the view which pluralists take of the state appears to stand in need of further explanation. Prof. Hsiao has remarked that none of them proposes to abolish it: but in what sense do they wish to retain it? Is it only a convenient administrative area, which has to be retained because the world of men is too large for practical handling, and which ought to be looked upon as strictly subordinate to such a superstate as some enthusiastic admirers of the League of Nations are supposed to desire? Or does it correspond (when ideally conceived) to some real differences in human nature which either ought to be retained or will remain whatever attempts are made to minimise them? The pluralist may reply that this question is not peculiar to him: but that is not quite so. A theorist who treats the state as inevitable may well admit without weakening his position that problems of definition will arise in regard to particular states or possibly in regard to all of them. But the pluralist both threatens the state from inside by insisting that other forms of association are equally important, and is suspicious of the state's claims as soon as the question of international (or supra-national) law is reached. If, therefore, he is ready to "discredit" the state, it seems particularly necessary that he should make clear what it is that he is discrediting.

P. V. M. BENECKE.

VII.—NEW BOOKS.

The Nature of Deity, a Sequel to "Personality, and Reality". By J. W. Turner, M.A., Ph.D., Reader in Philosophy in the University of Liverpool. London, George Allen and Unwin, Ltd., Ruskin House, 40 Museum St., W.C. 1. Pp. xii, 248. 10s.

In this volume as in his last, Dr. Turner is picking the fruit of his *Direct Realism.* There is no need to go back to that. In theory of knowledge, his position is that we simply open our eyes upon the real and it is there before us. There is no picture, no veil. And he believes he can place himself in line with the teaching of Hegel and Bradley none the less for his holding this. One clue to his principle may be given. He does not deny an element of construction in knowledge, he only denies its subjectivity.

In this book he travels a little further along the road which, in his *Personality and Reality,* "direct realism" had opened up to him. Here he explores the character, of the same "Supreme Self" whose existence it was his aim to establish there.

Here, as there, he declines all weapons of argument except the philosophical and scientific. He wishes to rely on no mysticism or revelation. The existence and character of a Supreme Self are argued to from ascertained facts, pretty much as one might argue for or against the existence or alleged characteristics of the ether. The mental temper to which the book is addressed may be indicated by words which the author uses for another purpose, when he speaks of a mind "of the non-mystical and extrospective type, which is perhaps best described as intellectual".

The features of the Supreme Self which, in the author's view, are supported by the fact of a universe in evolution—taking both the mechanical constitution of the universe and its evolution to be what science says they are—make a series sufficiently comprehensive to impress, one would think, even an orthodox theologian. The Supreme Self is conceived as perfect, omniscient and omnipotent, exercising purpose, creating, loving; and as exhibiting such attributes as supremacy, holiness, fatherhood. Some idea of the kind of argument advanced may perhaps be gleaned from one of the Author's more concentrated expressions (on p. 240) where he alludes to "the Supreme Self, of Whom reality is the revelation, and Whose purpose, because He loves all He creates, is the creation of beings capable of becoming more and more akin to Himself".

In the course of the discussion, the author attempts to interpret pain and evil; to face the ancient difficulties of reconciling these with divine omnipotence, omniscience and perfection; as well as to allay the inherent difficulties of these conceptions themselves. The resource is always to bring them back to be re-read in the light of the broad, simple outlines of the story of evolution on the one hand, and, on the other hand, those features in our human experience which suggest that such difficulties are not final. The method of argument is at root that expressed by Bradley: what must be, and also can be, inevitably is. From considerations which belong to his *Personality and Reality* and his *Theory of Direct Realism* he

finds that a Supreme Self must be. And he devotes this book—without, perhaps, attempting to carry the "must" along with him everywhere—to showing how much more, compatibly with our knowledge of the world, the Supreme Self can be.

A word in the Preface, referring to those earlier writings, betrays a touch of regret in the author's mind, that readers hitherto have mostly been content to appreciate his effort. This is a challenge, and the present reviewer at least must confess to an extreme difficulty in rising to it. What the work does is to drive another nail into the coffin of that philosophy which has not distinguished itself from science. Dr. Turner's is a philosophy of life. Humanity needs to live, and we are here shown a good deal which it can carry on with—a Deity distinct from the physical universe, one with whom man may establish direct relations, and one who may have attributed to him supremacy, perfection, creation, love and fatherhood. All this is secured without recourse beyond scientific results and psychological analogies. An unanswered question lies at the back of it. Is it philosophy or science? Does it deal in values; or are its values facts? Does it merely enumerate the attributes of divinity and exhibit, as a fact, their consistency with other known facts; or on the other hand, does it do something to exhibit the compulsion of the sheer meaning of God? The question is really a larger one. Is any treatment of values possible, such as will not turn them into facts from the instant it begins dealing with them?

It is clear that philosophy cannot be distinguished from science by its subject matter. One science is distinguished from another that way. If facts and values are to mark the line of cleavage, then the two must require different methods for their exhibition. It is not difficult to persuade oneself that intrinsically they do. Facts are something observed and values something enjoyed. But if so, the only way to deal with values is to enjoy them and get others to enjoy them with you. Philosophy, it would seem, must walk into life and take effect there. It is not anything distinctive otherwise. It must take its effect, however, through intelligent appeal to the freedom of intelligent beings, by communicating the enjoyed truth of the universe to them for their enjoyment; and not be content merely with having the observed facts of the universe brought to their notice. Dr. Turner's book only brings facts to our notice. To say so is hardly criticism. It is raising the question whether anyone can do anything else. But it is the confession, at the same time, of a difficulty, of which if Dr. Turner could be brought to feel the full force, one reader at least would be grateful. He repudiates, "not the constructive element in knowledge but the subjectivity of it"; which was surely well said. But what is objective activity then? Is it something that philosophy can be content to observe and speak about? Or is it something it must *be*? *Man kann nicht die Wissenschaftslehre wissen; man muss sie sein.* And what is involved in this *sein* when it expresses itself, not poetically or morally or in religious utterance, but rationally and intelligibly *about* these things?

J. W. Scott.

Sur diverses questions se présentant dans l'étude du concept de réalite. By Andries H. D. MacLeod. Paris: Librairie Scientifique, J. Hermann, 1927. Pp. 239. 25 fr.

This book, consisting of a deductive argument to elucidate the sense of "quelque chose de réel," and of discussions of connected problems, is both baffling and alluring. In a short review it is possible to comment on some only of the steps in Dr. MacLeod's argument. The whole

argument appears to be unduly complicated by the fact that Dr. MacLeod always refers to someone's apprehension of what a symbol expresses instead of referring simply to what the symbol stands for. Sections 1-10 are almost wholly concerned with this complication, and Dr. MacLeod, though aware of it, deliberately refrains from offering any justification for it. The first step in the argument occurs in Section 11. Its importance justifies a brief exposition. A describes something to B, who replies, "vous avez raison : en ce qui concerne cette matière il en est ainsi". On a second occasion A describes something which B does not know, and B says, "le fait qu'en cette matière il en est de cette manière ne m'était pas connu". Dr. MacLeod then argues that since the fact described by A to B is *any* fact, the constitution of every fact is expressed by the phrase, "ceci qu'en certaine matière il en est d'une certaine manière". It is difficult to find an English equivalent for this phrase, perhaps "x is somehow" may be used. This interpretation appears to be consistent with some of Dr. MacLeod's views, and if legitimate explains how some of his difficulties arise. The phrase quoted is not brought forward as an analysis of the concept *is a fact*, which is said to be simple.

Section 14 demonstrates the existence of at least one fact, for, however perplexed a philosopher may be, Descartes' starting point is sufficient to guarantee that there is at least one fact. Dr. MacLeod points out that there is an analogy between the phrase "ceci qu'en certaine matière il en est d'une certaine manière" and such a phrase as "one day a ship caught fire at sea". The latter proposition is true if there is any ship which did catch fire at sea; similarly, if there is at least one fact the former proposition is true. According to Dr. MacLeod a proposition is a symbol (Section 19). Two kinds of proposition are distinguished, "absolu," and "non-absolu;" yet Dr. MacLeod uses only propositions belonging to the former class, and he suggests that every proposition belongs to that class. Hence there is some difficulty in conceiving the nature of a non-absolute proposition. Absolute propositions are of two kinds, those signifying the same thing as the phrase "ceci qu'en certaine matière il en est d'une certaine manière," and those signifying something more determinate than the meaning of that phrase. "Columbus reached America in 1492," is given as an example of the latter kind of proposition. To the present reviewer Dr. MacLeod has not made clear this distinction between two classes of absolute propositions; for, while every member of the first class asserts that x is somehow, members of the second class appear to be values of a function of two variables, namely, x *is some particular how*. Section 59 suggests that Dr. MacLeod is aware of some such difficulty as is implied here, and paragraph 103 in Section 26 indicates that he would be willing to admit the distinction between a function and a value of that function. It is possible that a difficulty first referred to in Section 46 and more fully discussed in Section 69 would not have arisen had he made the distinction. Dr. MacLeod believes that both kinds of absolute propositions express facts, and Sections 20 and 21 suggest that they therefore express what simply is, something which under no circumstances can be other than it is.

Sections 22-60 elaborate implications of preceding chapters and introduce certain new ideas. The culmination of these implications and ideas is reached in Section 60. Previous to this section "real" has been used as though it meant something other than *is a fact*, for instance, in Sections 25 and 26 the meaning of a true proposition is said to be real, while in Section 23 a symbol constituting a proposition is said to connote *is a fact*, and in Section 45 "is a fact" is said to connote *is real*. These statements, however, form part of the argument to establish the conclusion, reached in Section 60, that *being a fact* and *being real* are identical. Dr. MacLeod

admits that th[illegible] fact" in which it means the same as "real" is not the ordi[illegible] but he shows that it cannot be far removed from this sense, [illegible] does not show exactly how it differs. Thus the notion of "someth[illegible]g real" still remains obscure. If this estimate of Dr. MacLeod's book is correct, the value of his book lies in the discussions of problems relevant to the main argument, rather than in this itself.

Each of these discussions is more or less directly connected with apprehensions and their objects, or with the relations between them. An apprehension is a state of consciousness; it is apprehensions which are true or false, propositions are so only derivatively. A true apprehension has an object which can be expressed by a proposition. What a proposition expresses is always apprehended as one object. Certain conditions subject to which one symbol can be substituted for another are discussed. If one symbol expresses all that another does the former asserts the latter. Frequent use is made of this statement, yet its truth appears to require qualification in certain cases: for example, it can be asserted that A believes p without asserting p. Dr. MacLeod discusses the question whether there is any difference between the meaning of "x," and that of "x is real". He answers this question negatively and believes that in doing so he must accept paradoxical implications. It is difficult to know why he does not prefer to reject the debatable assumption involved, namely, real is an attribute. Other discussions are equally interesting. There is a fascination in pursuing them. The skill of their constructor should be commented upon, so too should his habit of labelling weak points, and his baffling decisions to say nothing about certain others. Dr. MacLeod acknowledges his indebtedness to M. Phalèn and his disciples, and to Meinong. The book is preceded by an excellent summary of contents, and cross references supplied throughout the text facilitate tha task of tracing the bearing of each element in an involved deductive argument.

E. M. WHETNALL.

Der deutsche Idealismus und das Christentum. By HELMUT GROOS. München: Ernst Reinhardt, 1927. Pp. xi, 507. 15 M.

This is a very able detailed treatment of a subject with which German readers have again been made familiar in recent years. It is a purely phenomenological inquiry; the question handled is whether Christianity and German idealism can be reconciled, not whether, if they cannot, one of them (and which) is true. Groos holds stiffly that they are altogether at variance. In spirit and essential teaching they form exact contraries; they exclude each other like two globes. "Christianity is dualism, German Idealism is monism," and there is no middle way. The idealists, he says, do not harshly deny the being of God; what they do is to recognise Him but place Him pretty much on a level with themselves. Their fundamental creed is that science and art, taken together, are the equivalent of religion, and that man is the centre and goal of all things. Idealism has close affinities with Indian thought, Neo-platonism, mediæval mysticism, the Renaissance; but not with Christianity. Yet of this antagonism the idealist thinkers were quite unconscious; they in fact tended to imagine that for the first time they were explaining the Christian religion fully to itself.

It is plain that so clear-cut a thesis will be peculiarly difficult to sustain with objective fairness. To say that Christianity and idealism have nothing in common is forcing the note; it is indeed a positive in-

accuracy, for both, *e.g.*, are opposed to materialism. At the same time Groos has a case. Idealism was lacking in "the fear of the Lord" without which Christian religion means nothing; it was secular in spirit and had little care for worship. Even the friendly Troeltsch admits that the religion of idealism was too pale and uncertain a thing to admit of a living communion of the soul with God.

One of the excellences of Groos' book is that it covers more than the great triumvirate—Fichte, Schelling, Hegel. They have full justice; but the poets are not forgotten, and fine lines from Schiller and Goethe refresh the argument constantly. Lessing and Herder fill each his place; frequent reference is made to an acute sceptical writer, Hebbel by name, of whom we should gladly hear more. Schleiermacher is classed as an idealist *pur sang*, an estimate against which he himself more than once protested bitterly. Groos always thinks the worst of Schleiermacher, who in his eyes can do nothing right. We may grant that the great theologian took both sides on every question, but Groos sees only one side. Rather oddly, the name of Feuerbach has only one entry against it in the Index, Groos assuming tacitly that the great doubter stood outside the idealistic movement. It is deplorable, by the way, that so large and important a book as this should have a mere half-page Table of Contents, and no index of subjects.

After an introductory chapter on subject and method, the book is divided into three parts, treating respectively of idealist views of (*a*) God and the World, (*b*) Man and Christ, (*c*) the Movement and Consummation of things.

The difference between idealistic speculation proper and realist idealism is strongly underlined. Realism starts from nature, idealism from thought; realism deifies nature, idealism makes it only appearance; realism holds that redemption from evil is unnecessary, idealism that it is impossible. Both reject the ontological transcendence of God as a Being confronting the human mind. The words of Schelling might serve as text for the whole movement: "God is the Universe viewed from the side of identity, the universe is God taken on the side of totality." On Schelling's thought Groos is unusually interesting. For him God was neither free nor conscious nor eternal; he can speak of creation as "the fall of God," and takes a theogonic view of history. Yet a flabby good nature has sometimes classed him as a sound Christian thinker. No one has ever been quite sure what Hegel believed about God, but Groos points out how in a recent dissertation Dieter makes it clear that Hegel argues for both positions: (1) the Absolute is conscious at the beginning of the process, (2) the Absolute strives after consciousness throughout the process and eventually attains it in man. Groos judges that on the whole the second view predominates. God becomes as the world unfolds. For idealism as a movement God is not at all a Being who takes sides but either a super-personal Infinite or a universal dissolved in the human race.

A surprisingly strong case is made out for holding that Kant's idea of God is largely otiose, but here Groos scarcely attaches sufficient weight to the *Opus Posthumum*. Still, it becomes more obvious than ever that to call Kant "the philosopher of Protestantism," as is done not infrequently, is to play with words.

Groos rightly dwells on the frigid attitude taken up by idealism to the historical elements in Christianity. "History is rejected not merely as an object of faith but even as the evoking cause of faith" (p. 193). Not that history does not play a real part in the idealist construction of religion: Spirit can only reach true consciousness of its own nature through self-alienation in externality and escape therefrom, and the Founder of

Christianity was the first to see this; history, besides, is the medium in which Christianity has displayed its specific content and thus made itself the paradigm of ultimate metaphysical truth.

Perhaps the most original section of the book is that on teleology. The "telos" is goal as well as purpose, and Groos calls attention to the fact that the speculative movement really has no eschatology. "It either puts the goal in the present, as realism does, or in infinity, as does idealism." German idealism, in other words, refunds everything into process but wholly lacks anything corresponding to Christianity's moral sense of direction. Connected with this is the fact that it tends to pass from an initially optimistic view about immortality to a final pessimism. A striking parallel is here worked out between Fichte and Goethe.

Idealism then is not Christian, but it is indisputably and impressively religious in its own way. It is a religion of immanence. Its last word bears upon infinite and myriad process as contrasted with the *one* creation of the *one* transient but ineffably significant world for which the Christian faith stands.

The value of Groos' work is the fulness and fairness with which he states the argument for the radically unchristian character of idealism in the first quarter of the nineteenth century. These 500 pages of knowledge and penetration form a powerful indictment. The author is not always to be trusted in theology, as when he lays down that we must choose between divine immanence and divine personality. But in the long run it is difficult not to agree that the religious value of German idealism has often been overestimated. It is wholly lacking for example in the typically religious feeling of "creatureliness," the consciousness that freedom is more a gift from above than an achievement, and again in a sense of the Divine sublimity. Its great representatives came to religion primarily as thinkers, not as penitent seekers after God.

H. R. MACKINTOSH.

Fichte et son temps. By XAVIER LÉON. Tome II; deuxième partie. Paris, Colin, 1927. Pp. x, 329. 40 fr.

In this concluding volume of his admirable biography, M. Léon carries his narrative on from the close of 1806 to 29th January, 1814, when Fichte died. The earlier parts of the biography appeared in 1922 and 1924 respectively and were reviewed by the late Dr. McTaggart in MIND, Nos. 123 and 133 with an enthusiasm that must be shared by all M. Léon's readers. This final volume is able to supplement what was said in the earlier ones in certain small but significant particulars printed in Appendices. The reason is that Mr. Hans Schulz, in 1924, published certain letters and other documents which the Fichte family had suppressed. One of these is a moving letter from Reinhold to which Fichte, very shamefully but (one fears) characteristically, sent no reply.

For the most part M. Léon is anxious to demonstrate the essential consistency of Fichte's outlook and opinions throughout his changeful and stormy career. This is not easy, for Fichte, even more than most of us, reacted quickly, vehemently, and wholeheartedly to contemporary events and persons and at the same time had a really incredible capacity for believing always that when he spoke or thought it was Philosophy that spoke or thought in him. A letter of Soller's (p. 202) seems to put the point cruelly but not unjustly. "When a man," Soller says, "perpetually asserts himself under the show of saying, 'It is not I as an individual that say or wish this or that but the Idea that speaks and acts through me' he is turning a handsome phrase, and I admit very willingly that he is showing quite praiseworthy zeal. But when everywhere, in the smallest things as

in the biggest, he starts from the axiom that the Idea has chosen but one single organ and that this organ is always M. Fichte, I am pretty well convinced that individuality—that great enemy that has to be destroyed—has made a passable recovery of its rights." Even Fichte's friends, very often, took him to be at least half a charlatan. In matters of philosophy, this was, for the most part, bad luck. When Schelling's Philosophy of Nature set the fashion, the Philosophy of Egoity seemed to the plain man to have overreached itself badly, and it is to be hoped that a later age finds no great difficulty in crediting Fichte with complete sincerity both in his philosophy and in his actions. Yet even his zeal for philosophy took the strangest forms. Both in 1806 and in 1813 he was convinced that his proper service in the war was to be a *Feldprediger* not of Christian comfort and resolution but of philosophy's hope and incitement, and in 1813 when he offered himself thus as a philosophical chaplain to the forces he made the condition that he should be subject to no authority except the king's, and that he should be allowed to choose as auditors the enlightened portions of the army to which his mission was likely to appeal. Fichte appeared to think that these were practicable proposals.

In broad outline, M. Léon's narrative shows us, with a masterly leisureliness, first, Fichte at Königsberg inciting his compatriots to their duty under the guise of a rediscovery of the essential truth of Machiavelli's political doctrines; then Fichte at Berlin and his celebrated Addresses to the German people; then the foundation of the University of Berlin and Fichte's troubled rectorship; and lastly Prussia's success in arms.

Fichte went hurriedly to Königsberg in order to avoid the servitude of living in an area occupied by Napoleon's troops. Among other matters of interest connected with his conversion to Machiavellianism is the circumstance that no less a person than Clausewitz took Fichte seriously and discussed with him the military aspects of Machiavelli's view that infantry, not artillery, is the queen of battles.

The celebrated *Addresses* are a subtle adaptation of Schlegel's romantic nationalism, in which the romantic doctrine of the spontaneity and native vigour of the German tongue together with its inherent superiority to any Latin importations on the part of Frankish peoples is given a different direction; the Catholic-Austrian ideal of quickening once again the ghost of the Holy Empire is transformed into a spiritual and ethical reformation of the German nation; and deliverance from craven ideas of destiny (with scarcely veiled allusion to the Man of Destiny) is expected from a radical improvement of education according to Pestalozzi's principles. So much in the *Addresses* passed the censor pretty easily that we have the best possible evidence for believing that nobody at the time thought Fichte's influence really very great.

It seems amazing that Fichte should ever have been chosen as rector of a new and very important university at a critical period in its growth, even by a majority of one. He demonstrated his unfitness speedily and in the end was permitted to resign. But Schleiermacher was not a pretty enemy. For the rest, this part of the story contains a beautiful example of the maxim "Put not your trust in committees," or rather of the danger of pressing for the establishment of a committee which astute persons may use in a way precisely the reverse of the way intended.

When the hour came to turn successfully against Napoleon, Fichte, instead of allowing himself to be carried away headlong by the excitement of the times was preoccupied instead with the just, but not altogether timely, reflexion that the war instead of emancipating humanity might be only a particularist and dynastic move—and generally with the difficulty of knowing precisely when study should give place to arms if man's hope of salvation depends on the cultivation of his reason by faithful thinking.

After the battle of Leipzig and the retreat of the French, typhus attacked the wounded soldiery, and Madame Fichte, like other German ladies, nursed the sufferers. She fell ill herself, and her life was despaired of, but Fichte, on the morning which was thought the last, went stoically (for conscience' sake) to his lecture room, and lectured for two hours without revealing the agony of his spirit. When he returned, his wife, as by a miracle, had passed the crisis of her malady, and Fichte embraced her in a transport of joy and affection. That same evening the fever took him ; and in his case there was no kindly miracle to prolong his days. He had meant to write only one book more, in which his philosophy should receive its final form and be so clear and so complete that none could mistake or withstand it—a very human wish with a very natural ending.

JOHN LAIRD.

La Jeunesse de Renouvier et sa première Philosophie (1815-1854) suivi d'une Bibliographie chronologique de Charles Renouvier. Par l'Abbé LOUIS FOUCHER, docteur ès lettres. Paris : J. Vrin, 1927. Pp. 231, xlvi. 30 fr.

This is a remarkably sympathetic and at the same time impartial study, by a Catholic ecclesiastic, of a philosopher with whom, as the author says, anti-Catholicism was "une véritable passion intellectuelle". It presents a striking parallel to the studies of Comte, the other great philosopher who was born at Montpellier, by the Jesuit Father Gruber, whose work received the praise of Croom Robertson in MIND (O.S. xv. 143 ; xvi. 547). The admiration of Comte for the social order of the Middle Ages as directed by the Church furnished some explanation of Father Gruber's choice of a subject ; and perhaps in the case of Renouvier, who was in many ways the antithesis of the founder of Positivism, his acceptance of personal theism and the regard he had from first to last to the religious aspects of philosophy may have given the impulse to so careful a study of his intellectual development. In any case, the result is a book admirable for accuracy and fulness of information.

Like Comte, Renouvier was of a Catholic family and underwent the ordinary Catholic upbringing ; but there were distinctive factors that may be thought to have aided the preparation for his later direction. On the paternal side, his ancestors were not royalists like those of Comte, but devoted "patriots" of the revolutionary period, and his maternal ancestry included jurists by profession and (where there was a religious interest) sympathisers with Jansenism. Thus his very decided ethical and political preference for Protestanism seems a natural result of impressions of youth logically developed. He was not, however, as some have supposed, a Protestant, but, as the author states quite plainly, never during the whole of his long life (1815-1903) professed any but philosophical convictions. And, presumably, his thinking was influenced by discussions with Catholic friends like Lequier (see MIND, October, 1927, for an account of Lequier's posthumous fragments, first published by Renouvier) as well as by interchange of ideas with his friend the Swiss Protestant philosopher Charles Secrétan.

The philosophical interest of the Abbé Foucher's book is in the tracing of the continuity of Renouvier's thought from an early phase of Hegelianism and pantheism to the "neo-criticism," formed under the influence of Kant, which has given him his distinctive position in the history of thought. His latest phase of cosmogonical speculation is only touched upon ; but the exposition makes it clear that, while the second phase (that of neo-criticism) is the most typical, more of the first persisted than

the philosopher himself cared to recognise, and that still more of it re-appeared in the third.

An episode in Renouvier's life of which an interesting account is given is the part he took in politics from the Revolution of 1848 to the *coup d'état* of 1851, after which he retired (as the author puts it) from a society that had given itself a master, to write the great works of his middle period. His *Manuel républicain de l'Homme et du Citoyen* (1848) was denounced as a "detestable" book by the Deputy Bonjean, whose motion in the Chamber caused the fall of the Ministry that had sanctioned its official publication. Bonjean, we learn, afterwards became a high functionary of the Second Empire, and was one of the hostages shot under the Commune in 1871.

In his *Critique Philosophique*, founded in the early years of the Third Republic, Renouvier continued the effort to influence the direction of practical affairs. This was always from the ground of philosophical principle; but political as well as religious interest was never absent from his thought. As his biographer says: "Renouvier, par tempérament individuel, est un homme politique". This appears especially in his *Science de la Morale* (1869), to which a very high tribute was paid by Shadworth Hodgson, who described it (in MIND, O.S. vi. 34) as deserving the title (a title devised by Coleridge) of *The Statesman's Manual*.

Of Renouvier's formed political doctrine the Abbé Foucher gives a good general indication, characterising it as a doctrine of individuality and liberty, with justice for social ideal. In the *Manuel républicain*, which Renouvier himself described afterwards as "un péché de jeunesse," there were elements not altogether consistent with this, derived from the Saint-Simonian enthusiasm of an earlier period, with its socialistic outlook. Most attention, however, as is right, is given to the work in pure philosophy by which Renouvier made his great reputation and became most deeply influential. It would be idle to try to summarise a summary of the principles of neo-criticism; but one point may be noted as illustrating the author's impartiality. Against an attempt made to trace Renouvier's negation of the "actual infinite number" to emotional bias, he shows in detail that it sprang from long meditation, intellectually motived, on mathematical principles. Renouvier, it should always be remembered, had undergone a severe mathematico-physical training at the École Polytechnique. He himself, in his early philosophy, was an "infinitist"; and he was not brought to his later view till he had been stirred up by certain negative conclusions in an essay of the mathematician Cauchy. Of his "phenomenism" the starting-point was the hearing of Comte in his youth, though the influence did not tell until later, when it was reinforced by the study of English philosophers, in whom, as he has himself mentioned, he found a corrective of the Kantian influence which determined his thought on another side. But, as his present biographer shows, what first revealed to him his philosophical vocation was the working out of a thesis on Descartes and Cartesianism which formed the basis of his first publication, the *Manuel de Philosophie moderne* (1842). Amid the profound studies in the history of philosophical problems which with him went hand in hand with original thinking, his Cartesian starting-point seems to have given his ontology a permanent direction to monadism; and it is with a kind of monadism, which he called "personalism," that his latest period concludes.

A word of thanks must be added finally for the labour unstintingly bestowed on the bibliography of the strenuous philosopher's sixty years' work.

T. WHITTAKER.

L'Annee Psychologique. Vingt-sixième Année. Paris: Librairie Félix Alcan. Pp. xv + 755. (With appended Index to original articles in first twenty-five numbers.) 70 fr.

Along with the customary invaluable bibliography of current psychological literature, which has become practically indispensable to the student of psychology, the present number contains seven original papers, and three shorter notes. At least three of the original papers are of more than usual importance. These are the two papers by the editor, continuing his work on the latent time of sensation, and the paper by Prof. Piaget on the stages in the development of a child's notion of 'causality'. There are also papers by B. Bourdon describing experiments on auditory space perception, by M. Foucault on visual and auditory acuity among school children, by St. Velinsky on the Poggendorff illusion, and by P. Quercy on Taine's theory of image and hallucination.

In the first of his papers (*Recherches expérimentales sur la marge de variation du temps de latence de la sensation lumineuse par une méthode de masquage*) Piéron describes further investigations of the latent time of visual sensations, investigations which are the continuation of work begun as far back as 1911. In the present experiments he employs the phenomenon of the 'masking' of a weak light stimulus by a more intense one falling after it on the same retinal region, to measure the latent time of visual sensations with different degrees of intensity of the stimulus, and for both foveal and marginal vision. He finds complete agreement with the results obtained by the measurement of the variation of reaction time to light stimuli of short duration, with variation of the intensity. He also confirms the results of his own and other investigations with respect to the various factors involved in producing the retardation of reaction time to light with diminishing intensity, and obtains quantitative results and relations which are in entire agreement with previous results of investigations of sensorial latent time.

In his second paper (*Des données que fournit sur le mécanisme de l'excitation lumineuse l'étude du temps de latence sensorielle*) Piéron gives a resumé of the general theoretical conclusions to which we are led by the results of his own and other investigations of sensorial latent time. His most important conclusion is that the process of stimulation of the retina by light takes place in two stages. There is first a photochemical process, which is more rapid in the rods than in the cones, and possibly reversible. Then there is the excitation, by means of the chemical substances produced, of the nerve elements, which in this case is more rapid in the cones than in the rods. This conclusion is obviously important for theories of vision.

Piaget's paper (*De quelques formes primitives de causalité chez l'enfant. Phénoménisme et efficace*) is of very considerable importance as a contribution to child psychology. As he rightly says, the genesis of the notion of causality is involved in mystery for the psychologist who desires to penetrate into the consciousness of the subject and to reconstruct the steps from simple motor intelligence to the complex forms of intellectual activity. In the development of the notion of causality in the child he distinguishes, and illustrates from actual replies to questions given by children of ages 4 to 7, two stages—the stage of belief in personal efficacy on the part of the child, and the stage which he calls '*phénoménisme*,' which is still a magical stage dependent mainly on association by temporal contiguity. A very interesting sidelight is thrown on Freudian theories by Piaget's results.

Bourdon describes a series of experiments on auditory space perception. These experiments are conducted from a somewhat novel point of view.

and by a method which appears to be quite new. He attempts to determine whether in the auditory field there are phenomena of the same kind as we obtain in the field of vision, when a slit moves in front of a series of luminous points, so as to expose them successively one at a time. In the case of vision, for a determinate distance between the points and a suitable rate of movement of the slit, we get the illusion of a luminous point in movement. Using a sound produced by the striking of a lamina of parchment, fixed on a rotating wheel, on a series of fifteen similar laminæ, arranged round a semicircular arc of about a metre in diameter, Bourdon found that with slow rotation of the wheel he could get the illusion of movement, but visually imaged movement. With more rapid rotation the phenomena were entirely different, either one sound or two sounds (the first or the first and the last) being heard, the position assigned to these being dependent on the position and distance of the observer.

The paper of M. Foucault on "Visual and Auditory Acuity among School Children" gives the results of the measurement of the visual and auditory acuity of about 1500 children of different ages by somewhat crude methods. The results indicate a gradual improvement with increasing age. The main point of the paper, however, appears to be to show that the most satisfactory method of representing the results of such measurements is not by percentiles, as Claparède contends, but by arithmetical means. The paper as a whole is open to several damaging criticisms, but the most important is that sufficient data are not given to enable one to estimate the value of the quantitative results obtained by any method.

St. Velinsky's paper on the Poggendorff illusion shows, on the basis of interesting experimental data, that the illusion is not due either to the overestimation of the vertical with respect to the horizontal distances, or to the overestimation of acute angles, as Wundt has contended, but to the movement of the eyes as influenced by the direction of the line towards which they are moving.

The last original paper, by P. Quercy, is devoted to an analysis and appreciation of Taine's theory of Sensation, Image, and Hullucination. The essential points of this theory are: (1) sensation and image are cortical processes of the same nature, (2) they are localised in different centres, (3) the sensorial centres may be excited from within, that is from the image centres, (4) when this occurs we may have a suppression of the excitation from without, and the occurrence in consequence of hallucination.

The volume contains in addition three shorter articles or notes, the first "On the Method of the Analgesic Action of Muscular Effort" by Piéron, the second "A Contribution to the Psychogenetic Study of Attention" by F. L. Bertrand, and the third "The Uniformity of Technique in the Measurement of Reaction Time" by J. M. Lahy. The last describes new apparatus for securing uniformity in reaction time experiments by eliminating variations due to the experimenter. This volume also contains an index to the original papers which have appeared in the first 25 volumes.

JAMES DREVER.

Cours de Psychologie. Par MARCEL FOUCAULT. Tome Premier. Paris: Félix Alcan, 1926. Pp. 238. 15 fr.

It is becoming increasingly uncommon to take up an exposition of Psychology which is not concerned to present an entirely novel point of view. Perhaps, therefore, the most important thing to say about Prof. Foucault's work is that we have here a treatment of the subject which is concerned

with the development of psychological theory from the point at which it was left in the most important discussions of the nineteenth century. New facts are assimilated, new movements recognised in a tolerant, latitudinarian way, but the general tenor of the exposition is one of conservative development. This, at any rate is the impression gained from the fragment here at hand; but it is the first volume only of a work to be completed in eight parts. It carries the sub-title "Introduction Philosophique à la Psychologie," and is almost entirely concerned with the discussion of scope, aims, and methods, and with the classification of departments in the science. The first four chapters are devoted to the most preliminary of matters, the different types of Psychology, practical, literary, philosophical, and scientific (Ch. I); the aims of scientific Psychology (Ch. II); its methods, external observation, introspection, experiment, and measurement (Ch. III); and the departments, normal, abnormal, child and animal psychology (Ch. IV). In Chapter V an attempt is made to define and establish the doctrine of the freedom of the will in a form consistent with the postulate of psychological laws. The essential point here is the denial of infinite causal series. In the course of explanation, it is argued, we come to causes which are not themselves effects. These, provided certain other characteristics are present, can be designated 'free acts'. Causal necessity relates not to the relata in causal series, but to the relation itself. The law alone is absolutely necessary, effects are never more than conditionally necessary, causes are contingent at the beginning of the series. That there are in fact causal laws in Psychology we are justified in believing on various grounds, from the *raison sentimentale* (our wish to find laws) to the empirical fact that such laws have already been more or less established. After a discussion (Ch. VI) of Psychological analysis—a short and somewhat inadequate treatment concerned largely with William James and the Mind-Stuff theory—the application of causal notions to mind is further examined under a classification of Psychological Laws (Ch. VII). Four kinds of laws are distinguished, laws of the co-existence of character (lois typiques), laws of composition, laws of causality, and laws of finality. Causal laws in psychology are analogous to causal laws in physics, except that, following Meyerson, Prof. Foucault is prepared to admit that all physical laws can be reduced to a statement of identity whereas some psychological laws cannot be so reduced. The instances actually adduced, however (the law expressed in the curve of learning, and Weber's law), are such as can be expressed in physiological terms, and the status of physiological laws on this theory is not here discussed.

In causal laws the temporal antecedent determines the consequent. In the laws of finality this relationship is reversed. That future events determine present mental events is explicitly affirmed. The child's interest in and attention to the pictures of a toy is determined by the future possession and use of the toy itself. The obvious difficulty arising in cases when the alleged future event is one that in fact will never occur is not satisfactorily met. The difficult notion is introduced that future events already exist *en puissance*, and that this is a mode of existence, or of partial existence, or of existence in course of realisation. Such a mode of existence ultimately comes to be identified with a present tendency or need; the nature of which receives no further elucidation.

The discussion, however, is obviously not intended to be complete. Two criteria of finality are suggested, and it will be of great interest to see what use is made of them in the later volumes. Firstly, finality is indicated by series of events which terminate in an event which has utility. This terminal event moreover occupies the point of convergence of a plurality of such series. When such series are found constant in form

amid diversity of circumstances the affirmation of finality is legitimate. The second criterion arises from the fact that any such series has a place in a larger series in such a way that the end of the former plays the rôle of means in the latter. Whilst it is by no means clear how these criteria justify the affirmation of finality in the sense originally defined they at least suggest the possibility of an empirical approach to the problem under discussion. And, in general, there is much in this volume to suggest a wealth of empirical material behind the more abstract treatment here adopted. If this material can be presented in a form which in any way contributes to these widely debated issues, a welcome to the remaining volumes is certainly assured.

C. A. MACE.

An Approach to the Psychology of Religion. By J. CYRIL FLOWER, M.A., Ph.D. London: Kegan, Paul & Co., 1927. Pp. xi, 248. 10s. 6d. net.

This book is based upon a dissertation which obtained for the writer the Cambridge Ph.D., and is apparently a first venture. Let it be said at once that it has merits which make it welcome, though it is not of course flawless. Of the last book which it fell to my lot to notice upon the psychology of religion in these pages, I said that it raised the question whether the psychology of religion was not proving somewhat limited in scope and outlook. In part, at least, Dr. Flower's book gives hope of some advance and signs of freshness of treatment. His general position is reminiscent of Otto's "Idea of the Holy," with a difference that is an improvement upon Otto's position. Otto's irreducible category of the Numinous seems to be nothing more than a fresh way of postulating a "religious instinct". This amounts to the admission that nothing more can be said. Dr. Flower holds that it is possible to carry analysis beyond this, and asserts that it is the lack of adjustment towards the "Wholly Other" that originates religious reactions. In other words, the "numinous state" is a frustration experience, and Dr. Flower's contention is that this sense of frustration in situations outside personal control is the common characteristic of all religions.

What I think Dr. Flower fails to prove is that this is the *differentia* of religious behaviour. He admits that the frustration experience calls forth other than religious reactions. Some, for example, are of a magical character. Dr. Flower says that psychologically the distinction between magic and religion is irrelevant. From one point of view this is true; but from others it certainly is not. A psychology of religion that cannot distinguish magic and religion has far from exhausted its powers of analysis. Dr. Flower contends that religion is "essentially an attitude determined by the discrimination of an element of 'utterly-beyondness,' brought about by a mental development which is able to appreciate the existence of more in the world than that to which existing endowment effects adequate adjustment". But this *per se* is not an account of religion, though it may describe an attitude out of which religious reactions might develop. It does not carry us further than similar attempts: for example, that which identified religion with social as opposed to unsocial behaviour, or that which sees in religion the affirmation of the life impulse, or faith in the conservation of value. The frustration experience is negative, and only in so far as it is transcended, and some sense of relationship with the "Utterly-Beyond" or whatever else it be called, is established, do we have reactions properly to be denoted as religious. Whilst, therefore, it is possible to agree largely with Dr. Flower's analysis, it does not seem in itself enough.

After the first two chapters, which set forth the position described, the author proceeds to a lengthy examination of Dr. Paul Radin's monograph on the Winnebago Indians, with whom Mr. F. C. Bartlett has made us familiar, and from them he proceeds to a study of George Fox, with the intention of illustrating his point from two levels of culture. A chapter on conversion chiefly based on Starbuck's work follows, but does not add much. The last chapter on psycho-pathology raises some good points, but spends much space on criticising a position of minor importance. Appendices are added on religion and pre-history; on Otto's book, and on a questionnaire the author once sent out. This rather miscellaneous programme suggests that Dr. Flower has wished to embody most of his work in one book. He is not wholly free from the confidence of early judgment, for example, in his adoption, apparently, of a suggestion of J. B. Pratt's that a rudimentary cult may exist prior to explicit religious ideas, and in his criticism of Dr. Marett therewith; and his disagreement with a very pertinent criticism by Mr. F. C. Bartlett. Yet taken as a whole Dr. Flower's book is suggestive and promising, and arouses interest in such future work as he may be able to fulfil. There are serious slips which need correction. Chapters VI and VII are transposed on the title-page; Dr. Dawes Hicks is called Dicks; one or two references in the index seem to be wrong and there are a few minor misprints.

E. S. WATERHOUSE.

Psychologie de l'Art. Essai sur l'activité artistique. By HENRI DELACROIX, Professor at the Sorbonne. Paris: Félix Alcan, 1927. Pp. 481. 50 fr.

This book examines æsthetic experience (contemplative and creative) and describes the constituents of music, poetry, and painting. The treatment throughout is sound and stimulating and the language is always pleasing. Perhaps the author's most striking feature is his catholicity. He is well aware of the different types of reaction to works of art. He also avoids treating the different resulting theories as mere straw men. Another virtue is his frequent reference to the actual experiences both of those who create æsthetic works and of those who merely contemplate them.

Views concerning the nature of æsthetic experience are notoriously numerous. Prof. Delacroix considers some of them in his early chapters, namely, those which suppose this experience to be of the nature of play, empathy or contemplation of ideas. Each of these is admitted to contain certain truths, but is rejected on the ground of neglecting others. At a later stage the view that the æsthetic state consists in perceiving the relations between formal elements, is similarly dismissed.

Complete æsthetic pleasure is said to be "a synthesis of sensible, formal and purely affective pleasure". The author, however, does not limit himself to this bare assertion. The function of art—and this is the main thesis of the book—is to excite emotions and ideas through perception of the form which controls and expresses them. The emotions and ideas are not those of ordinary life—for example, musical form can express emotions which cannot be experienced without it. Hence the words "express" and "control" are important, signifying more than the mere causation of some emotion. Certainly, then, in many of the responses which Prof. Delacroix describes, art is not fulfilling its function. It would seem that he is ready to follow the common usage of calling "æsthetic" almost any experience resulting from a work of art; but, departing from the strictly psychological standpoint, he selects certain experiences as more complete and more appropriate. Thus one can see

how the hard facts of common usage may be faced without abandoning the luxury of a fairly private heaven. But there are many with a firm faith in the latter who would utterly deny Prof. Delacroix's view of the experience to be enjoyed there. It is, however, a fact that the experience caused by a work of art can be composed of the sensible, formal and emotional elements which he enumerates, and, despite Mr. Roger Fry and Mr. Clive Bell, there is much to be said for the view that such an experience may be an organic unity. On the other hand, Prof. Delacroix underrates the amount of emotion which can be experienced through a perception of form alone (or of form with a minimum of the non-formal). It is just here that his observation shows signs of being limited.

Much of the book is devoted to other matters. Prof. Delacroix gives an interesting chapter to creative activity, stressing the discipline which such activity involves and holding that inspiration is essentially similar to more normal experiences. In the three chapters on music, poetry, and painting he analyses their technical elements and tries to show the correlation of these elements with feelings. He pays most attention to music in which the feeling is described as "abstract and generalised"—that is, not centred in concrete situations. It is his opinion that one kind of sensibility tends to supplement another, thus visual images may aid musical appreciation. Such are some of the other questions with which the author deals; but in this part of the book the reader must not expect great detail, though he will find many interesting suggestions.

HELEN KNIGHT.

S. Thomae Aquinatis Opuscula Omnia, cura et studio R. P. PETRI MANDONNET. Paris (Lethielleux), 1927. 5 vols. 8vo. 90 fr.

Students in search of a handy text of the smaller works of St. Thomas will welcome this re-issue of the old Lethielleux edition of 1881. The editor, whose name is a sufficient guarantee of careful scholarship, has completed the old edition, bringing up the number of opuscules printed from 47 to 69, and has endeavoured, by means of a new arrangement of the material, to distinguish between the genuine and the apocryphal. Volume I comprises the genuine philosophical works, volumes II-III and the greater part of IV the genuine theological. The remainder of IV is given up to the doubtful of both classes, while V contains those condemned as spurious. All the five volumes, averaging 500 pages each, cost together about fifteen shillings, but those who have no interest in mediæval theology can purchase the first, which contains a number of very famous philosophical pieces, separately.

It should be remarked that in no case has the editor attempted to give a new critical text. Indeed, so far as possible he has pressed into service the old stereos of 1881.

L. ROTH.

Faith and Reason in Religion. By GEORGE GALLOWAY, D.Phil., D.D. London: Nisbet & Co., 1927. Pp. vi, 231. 7s. 6d. net.

Dr. Galloway established his reputation in the philosophy of religion a good many years ago, and as he has not been very prolific with his pen, this volume of essays will receive an additional welcome from those who have read his former work. The chief essay is the first, upon "Knowledge and Religious Faith". Its contention is that we have no such knowledge as would enable us to supersede or discredit faith. Our systems of knowledge

are inadequate to the reality with which they deal, and cannot serve as means of testing ultimately the postulation of faith. Neither is it true that "when reason ends faith begins:" faith begins, reason continues, and faith does not cease when reason must. In the sense of giving the larger world-view, faith is the completion of knowledge. The second essay is upon the "Genesis and Truth of Religious Beliefs," which arise, it is contended, out of endeavour to interpret the religious experience, and the Reality on which it depends. Next comes an essay on "Evolution and the Finality of the Christian Religion". Such finality is interpreted as meaning that Christianity is the supreme expression of the Divine Spirit entering into human history. This essay therefore is appropriately followed by that upon "History and Its Religious Interpretation". It turns upon the question whether it is possible still to maintain that history has a divine meaning. Dr. Galloway holds that it has, if we are willing to admit the fundamental character of personality in society and history. History thus may be regarded as the medium of personal development. Its values come to a focus in persons.

The remaining essays are rather more of a theological character, one deals with "Grace and Freedom," another affords an interesting study of Butler, and the last is a college "Inaugural" on the study of theology. Dr. Galloway certainly touches upon a point of great importance when he says that a preacher "has no title to proclaim as his own doctrines which he has never found of spiritual value". It is just that defence of traditional dogma which has lost all its power to express the spiritual experience of the times, that makes so much preaching futile.

The title of the book expresses the contents generally. Prof. Whitehead has said that religion must be as ready to scrap obsolete doctrines as is science. The sentiment is unexceptionable, but the difficulty is that it is seldom possible to demonstrate by experimental evidence that a religious dogma is untrue. Consequently the scrapping process is likely to be a longer one, sapping rather than scrapping perhaps. Nothing can contribute more to such a process than the philosophy of religion, by its inductive enquiry into the bases of belief. Dr. Galloway's book is not destructive, yet the principles it exemplifies cannot fail to help the sifting out process that must continue if religious belief is to express and not distort experience. It is not written from any partisan standpoint. Its reasoning is impartial and based upon a comprehensive outlook, and it will serve as an admirable introduction to Dr. Galloway's religious philosophy, especially to those who have not read his larger books.

E. S. WATERHOUSE.

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VIII.—PHILOSOPHICAL PERIODICALS.

JOURNAL OF PHILOSOPHY. xxiv [1927], 17. **J. Dewey.** 'An Empirical Account of Appearance.' [Distinguishes various senses of 'appearance,' (1) as opposed to 'disappearance,' (2) = 'manifestation,' (3) = 'representation,' with a possible question as to a *right* to represent. These are all prior to the antithesis of 'appearance' and 'reality' which is traced to the Greeks. "But Greek methods of inquiry made no provision for the 'category' of the hypothetically existent any more than it did for the temporarily problematic." They "made a single jump from the apparent object to the object of thought". The real distinction is one in value. "As actual existences all 'appearances' stand on the same level; as signs some are better than others." 'Appearance' therefore is not to be interpreted metaphysically as an inferior order of being.] **M. R. Gabbert.** 'Moral Freedom.' ['Presents the thesis' that "no demand of freedom, or of moral judgment, is contradicted or made impossible by the assumption that activity is always according to definite positive laws," but is vitiated by the ambiguities of 'law'.] xxiv, 18. **B. I. Gilman.** 'Relativity and the Lay Mind,' I. [Premising that "not all the layman's difficulties with relativity are due to the doctrine itself," the writer urges that Eddington after rejecting absolute place in space has no right to assume an absolute 'structure' and no need to retain the ether as a 'substratum'.] **G. S. Boas.** 'The Datum as Essence.' [A criticism of C. A. Strong and D. Drake which formulates their theory as assuming that "the datum is (1) a universal. (2) It has transcendent reference to a particular. (3) But a universal cannot logically imply the existence of anything. (4) Therefore the existence of the transcendent reference is posited by a non-logical but reliable act of faith." It is objected to this that "(1) the datum is not a universal, for (2) it has transcendent reference to a particular, and (3) a universal cannot logically imply the existence of anything. Nevertheless (4) the existence of the transcendent reference is discovered by the same type of reasoning as is used in any other inference."] xxiv, 19. **B. I. Gilman.** 'Relativity and the Lay Mind, II.' [Formulates under seven heads the paradoxes of relativity and the objections they give rise to in laymen, brings out the hesitations and dissensions of the relativists, and their failure to show that motions of rotation are relative, and concludes that "the conception of space-time presents insuperable difficulties, philosophical and logical."] **M. S. Harris.** 'If we have Life do we need Philosophy?' [Disputes Herzberg's view that "philosophical wisdom is not purely intellectual, but is conditioned by the unsatisfactoriness of the thinker's life," and that philosophy is a form of inhibition and a substitute (*Ersatz*) for life, contending that "the life of reflection is truly the most significant life".] xxiv, 20. **C. M. Perry.** 'A Principle for Realism.' [Praises real contradiction as such a principle, somewhat rhapsodically, *e.g.*, "the real realist will be a glutton for contradiction. To his mind both idealists and realists are tender minded and wear ribbons in their creedal hair".] **B. Ginzburg.** 'Anthropology and the Rights of Man.' [Protests against the idea that science has rendered obsolete the

Declaration of Independence.] xxiv, 21. **G. Boas.** 'Mr. Dawes Hicks's Theory of Perception.' [Pungent criticism, pointing out that in cases like iridescence we *know* how the colour is produced and that it is not in the object, and concluding "one of the most potent reasons for epistemological monism is fear of the number 2. . . . Epistemological monists seem to know that if the objects of knowledge are ever particulars, they cannot explain the subsistence of universals or generalisations. So leaping to the other extreme, they make them universals. The problem then is to explain the existence of particulars."] **D. Drake.** 'The Data of Consciousness as Essences.' [Replies to Boas in xxiv, 18, admitting that "the relation between the status of existence and the status of being-an-essence is impossible to define, I fear, perhaps impossible to understand," but claiming that there are *three* essences, "the essence which exists as the object to be known, the essence which exists as the mental state of the knower, and the essence which is given," seen, felt, etc.] **M. W. Calkins.** 'Biological or Psychological? A Comment on Perry's Doctrine of Interest and Value.' [Decides that "though forever coquetting with" the former he really holds the latter.] xxiv, 22. **L. E. Akeley.** 'Wholes and Prehensive Unities for Physics and Philosophy.' [A long but obscure paper obviously inspired by the terminology of Smuts's *Holism* and Whitehead's *Science and the Modern World*. It protests against "substituting 'the whole' for wholes" and begins "by examining a whole in the science of physics," to wit 'the electric circuit'. From so palpably teleological a starting-point it arrives at the doctrines that "the creation of wholes by man is art. . . . There is an art of building electric circuits. It respects purposes and ends," and that "the word 'prehend' avoids the unfortunate associations of the word 'know' ".] xxiv, 23. **D. S. Miller.** 'Dr. Schiller and Analysis.' [Fourteen points in reply to Schiller's criticism in xxiv, 16. Accuses him of 'loose' thinking, but is evidently still far from agreeing with him in the use of the terms under discussion like 'creation,' 'cause,' 'freedom,' 'law,' and 'novelty'.] **P. A. Schilpp.** 'The Doctrine of "Illusion" and "Error" in Scheler's Phenomenology.' [Has no difficulty in convicting Scheler's doctrine of illusion of glaring self-contradictions in first denying that illusion involves judgment and then declaring that the illusory perception creates no illusion till it is falsely 'referred' to a real object. Hence it is not possible to separate 'illusion' and 'error' completely. But Scheler's account of error has value; it makes error "nothing more or less than a mistaken or inadequate judgment about anything whatsoever".]

REVUE DE MÉTAPHYSIQUE ET DE MORALE. 33e Année, No. 2, Avril-Juin, 1926. **R. Berthelot.** *La sagesse Shakespearienne.* [Treats Shakespeare as an example of the "poetical and pastoral wisdom of the Renaissance," which consists in valuing the unsophisticated life of nature and of the countryside above the feverish, selfish life of the town. Traces the history of this type of wisdom from classical antiquity through to Tolstoy, and claims to find its highest expression in such Shakespearean characters as Oberon and Prospero. A tragic character like Hamlet shows the fatal consequences of neglecting this simple wisdom of Arcady.] **J. Eisenmann et Y. Rocard.** *Le Principe de correspondance et l'état actuel de la théorie des Quanta.* [Argues that the principle of correspondence cannot be more than a temporary makeshift, which is bound to be abandoned. The two determinations of v (velocity of light) which it employs are, if not mutually contradictory, at least incoherent. Yet, in spite of its imperfections, the principle has been successful, and its success is attributed by the authors to the general fact that the classical theory of mechanics and the theory of quanta offer equally good explanations of,

e.g., the Zeeman effect and the Compton effect. Both systems of explanation have their gaps: both also have points in common. The authors suggest that a synthesis of the two theories is a more likely development in the future than the complete replacement of the classical theory by the theory of quanta.] **C. Schuwer.** *Les futurs contingents et la notion d'imprévisibilité dans la création artistique.* [Artistic creation is not to be understood by assuming either a world of fixed artistic "possibles" out of which the artist selects one for realisation, or a pure, indeterminate creative spontaneity in the artist. The artist does not create in a vacuum, but has to deal with determinate facts—medium, technique, the canons and rules of his art, the social milieu, the public. The very work of art itself, in taking shape, reacts upon the creative impulse and gives definite form to the latter. The "work of art" is not simply determined by the artistic "idea," but the "idea" in its turn is made determinate by the "work" and by all the determinate conditions under which the latter is produced. Only so is artistic freedom to be understood.] **E. Leroux.** *Le plus humain des philosophes: William James, d'après sa correspondance.* [A sympathetic review of "The Letters of William James". Points out that James never achieved that complete statement of his philosophy which he was always promising, but that his "life taken together with his writings is and remains a fine source of bracing and liberating influences".] **P. Lévy.** *Sur le principe du tiers exclu et sur les Théorèmes non susceptibles de démonstration.* [A criticism of R. Warre's article in this Revue, Vol. 31, No. 3. For the point at issue, see Lévy's further article in No. 4, analysed below.] **G. Guy-Grand.** *L'École unique et les diversités nationales.* [A group of men during the war formed a society of "Compagnons" for continuing the spirit of fraternity formed in the trenches among the children in school and the citizens at large. The "single" school was to realise their dream—at once national and democratic—of an educational system in which every child, without handicap of class or wealth, should be given the opportunity of unfolding all its potentialities of culture. The attempt to realise this ideal runs up against deep-rooted diversities of outlook and interest—religious, social, cultural, professional—which oppose any single educational pattern. The author makes suggestions as to how these diversities might contribute to a "general culture" which should realise a "spiritual democracy—the rule of reason and human dignity".] New books, French and Foreign. Periodicals.—33e Année, No. 3, Juillet-Septembre, 1926. **M. Winter.** *Le problème cosmologique et la Théorie de la relativité.* [The Theory of Relativity does not commit one to the question, Is the Universe finite or infinite? It implies no answer to this question either way. The theory applies only to "experimental fields," *i.e.*, to fields of events open, at least in theory, to observation, and centering for each observer in the events in his immediate neighbourhood.] **R. Hubert.** *Le problème de la sensation.* [After a historical survey of rationalist theories of sensation, treating it either as pure illusion or else as merely providing clues for action, the author criticises, first, O. Hamelin's attempt to deduce sensations *a priori*, and, next, Bergson's intuitionist way of dealing with them. He insists on distinguishing between the raw sensation, the elaborated sensation (in perception), and the sensible quality, and demands a theory which, whilst acknowledging sensation to be in its own nature "radically unintelligible," shall yet offer an "intelligible reason for this unintelligibility".] **R. Lacombe.** *La Thèse sociologique en psychologie.* [A critique of the attempt of the Durkheim school to divide the domain of the science of the soul between physiology and sociology. Begins with a careful compilation of the contributions made by different members of the school to the construction of a sociological psychology; goes on to detailed criticisms,

on the principle that society does not account for the *existence* of our mental functions, but only helps to determine our *use* of them; and ends by rejecting Durkheim's concept of a "collective consciousness". Sociology and Psychology differ, not so much in subject-matter as in point of view. The latter deals with mind from the point of view of the individual subject; the former with its manifestations through social organisation.] **L. Dauriac.** *Louis Liard.* [A rather verbose account of the work of L. Liard.] **R. Wavre.** *Sur le principe du tiers exclu.* [A reply to P. Lévy's article in the preceding No. of this "Review". For the point at issue, see Lévy's further article in the following No., analysed below.] New books, French and Foreign. Periodicals. Nécrologie: Giovanni Amendola.—33e Année, Vol. 4, Octobre-December, 1926. **E. Durkheim.** *Critique de Saint Simon et du Saint-Simonisme* (*Derniers fragments d'un cours d'Histoire du Socialisme*). [Extracts, edited by Marcel Mauss, from notes of lectures delivered by Durkheim at Bordeaux in 1896. Durkheim criticises Saint Simon's principle of "industrialism," according to which modern society is actuated wholly by economic motives. In reply Durkheim dwells on the importance of moral forces, as illustrated especially by professional organisations with their professional standards.] **E. Rignano.** *La psychologie dans ses rapports avec la philosophie et avec la science.* [The first part of the article tries to show that psychology is necessary for understanding the issue between defenders and critics of teleology in metaphysics; for distinguishing between different types of reasoning in Theory of Knowledge; and for deciding whether a system of "rational" morality is possible in ethics. The second part, similarly, seeks to show that psychology is necessary for the solution of the most fundamental problems of all scientific thinking. Incidentally, the author claims that the psychology of reasoning shows the claims made on behalf of logistic to be entirely unfounded, and that Einstein's theory is a "purely mathematical construction, to which no reality corresponds". In the third part, the author distinguishes between Anatomical Psychology (or Neuro-Histology), Physiological Psychology (or Experimental Psychology), and Psychological Psychology. The latter is based on a unitary conception of the purposiveness of life (*le finalisme de la vie*).] **M. Guéroult.** *La méditation de l'âme sur l'âme dans le "Phédon".* [Claims that the argument in the Phædo about the nature and the immortality of the soul exhibits an "ordered initiation" into the subject in four stages or episodes, which are analysed in detail. The article concludes by discussing the bearing of Plato's arguments in the Phædo on contemporary Greek Theories about the soul.] **G. Richard.** *La psychologie de la conversion ches les peuples non civilisés.* [A careful and competent critical notice of R. Allier's book. Points out the differences in the process of conversion resulting from the different aims of Roman Catholic and of Protestant missionaries. Suggests that conversion (in the Protestant sense) for an uncivilised person consists in emancipation from the beliefs and practices implanted in him by tribal education, and thereby in a regaining of his rational personality.] **E. Gilson.** *Le VIe congrès International de Philosophie.* [A lively account of the general proceedings at the Congress, with good summaries of some of its sessions. Gilson finds the most characteristic feature of present-day philosophy, as represented at the Congress, to consist in that the implications of science compel philosophers to face the great problems of classical metaphysics even when they are least willing to do so.] **P. Lévy.** *Critique de la logique empirique* (*Réponse a M. Rolin Wavre*). [This article briefly sums up the points at issue in the debate which MM. Lévy and Wavre have been conducting in recent issues of this "Review". The main point is that M Wavre, on the principle *Experimentum solum certificat in talibus*, refuses to admit propositions, other than postulates,

concerning mathematical entities which cannot be actually calculated or constructed. Consequently, *e.g.*, he refuses to admit that the alternative, odd or even, applies to a real number to which we have no means of assigning a definite value. M. Lévy holds, on the contrary, that the predication of such a disjunctive is significantly possible, even though we cannot demonstrate which of the two alternatives actually obtains.] Table of Authors. Table of Articles. Table of Supplements. New books, French and Foreign. Periodicals.

REVUE DE PHILOSOPHIE NÉO-SCOLASTIQUE. XXVIIIe Année, Deuxième Série. No. 15. August, 1927. **O. Lottin.** *La syndérèse chez les premiers maîtres franciscains de Paris.* [A study of the influence of the treatise of the Chancellor Philip on the earliest Franciscan teachers, Alexander of Hales, John of la Rochelle, Odo Rigawd, St. Bonaventura.] **J. Legrand.** *La connaissance artistique.* [Bergson ascribes to the artist a "natural detachment which shows itself in a certain virginal manner of seeing, hearing, thinking". The essay aims at illustrating both the "detachment" and the "virginality". The artist is like a "great child" in his detachment from scientific or utilitarian *arrière-pensées*; unlike the child, he does not break his plaything to find out how it works; this is his quality of "virginality". His attention is wholly absorbed by a directly apprehended object; yet his apprehension of the object is saturated with intellect. The object is transformed for him by his own "affective" activity. The peculiarity of this activity is that it does not stir the *whole* man. It leaves his moral being untouched. Hence the work of art never gives us more than the *illusion* of life and reality. This suggests the moral problem whether art may not be an obstacle in the way of the noblest human experience, that of giving one's whole soul freely to an object which is one's true good. A very suggestive essay, but is there not, as in so much æsthetic discussion, a confusion between two radically distinct attitudes towards the "object," that of the contemplator and that of the artist at work? Perhaps the author *intends* only to deal with the former.] **A. Mansion.** *La genèse de l'œuvre d'Aristote d'après les travaux récents.* [A long appreciation of the work of W. Jaeger by an excellent Aristotelian scholar. M. Mansion, while recognising the great value of Jaeger's investigations, finds grounds to dispute many of his detailed results. Aristotle cannot really be made, in his final stage, into a positivist, and the earliest strata of the *Metaphysics* are not so overwhelmingly Platonic in tone as Jaeger contends.] Reviews of books, etc.

IX.—NOTES.

INDIAN PHILOSOPHY.

To the Editor of "Mind".

Dear Sir,

I do not write to complain against Dr. E. J. Thomas's unsympathetic review of *Indian Philosophy* in the October number of Mind, for reviewers have their rights with which I have no desire to interfere. You will, however, permit me to say a few words regarding some of the points raised in it.

1. The review opens with a suggestion of inconsistency on my part regarding the value of Indian Philosophy. It is alleged that, while I assert in one place that it has great cultural value, I seem to doubt it when I say "even if Indian thought be not valuable from the cultural point of view, it is yet entitled to consideration, if on no other ground, at least by reason of its contrast to the other thought systems and its great influence over the mental life of Asia". While I believe in its cultural value, I am aware that there are some who do not share this opinion. In the sentence quoted, I am suggesting that even for those who do not regard Indian Philosophy as culturally valuable, it has a historical interest or, as Dr. Thomas would prefer to put it, 'anthropological' interest. I am unable to see any inconsistency here.

2. Dr. Das Gupta's work on Indian Philosophy is still in progress and, if and when it is completed, it will constitute an attempt to deal with Indian thought as an undivided whole.

3. After observing that Dr. Gough's book on the Upanishads "suffers from being written with the assumption that they are to be understood according to the rigid system of a much later age," Dr. Thomas proceeds thus: "but Professor Radhakrishnan is just as dogmatic in telling us that 'the Upanishads had no set theory of philosophy or dogmatic scheme of theology to propound. They hint at the truth in life but not yet in science or philosophy. So numerous are their suggestions of truth, so various are the guesses at God, that almost anybody may seek in them what he wants and find what he seeks' ". I do not know whether Dr. Thomas remembers his notice of the chapter on the Upanishads in the *International Journal of Ethics*. He writes there: "Professor Radhakrishnan in this work, which is a reprint of the section on the Upanishads from his *Indian Philosophy*, restores the subject to its true atmosphere, so that although he writes on the philosophy of the Upanishads, he admits that they 'had no set theory of philosophy or dogmatic scheme of theology to propound. They hint at the truth in life but not yet in science or philosophy' ". The same view and practically the same sentences taken from the same context call forth a compliment in the *Journal of Ethics* and a stricture in Mind!

4. Dr. Thomas suggests that my claim that Sankara's system has a self-justifying wholeness is inconsistent with the admission of Sankara's indebtedness to Buddhism and of the criticisms levelled against him by

thinkers of other schools. I do not think that self-justifying wholeness means either independence of the past or infallibility. It only means that the different parts of the system hang together in a consistent manner.

5. The concluding paragraph of the review mentions a sin of omission. "We hear nothing of the obscenities of Sivaism or the licentiousness of Tantra and Krishnaism, but it is in these religions that the vedantic doctrines have found a home without essentially overthrowing the pantheistic basis." Though my main interest is philosophy, I have found it difficult to avoid discussions of religious questions on account of the close connexion between religion and philosophy in Indian thought. But as, what Dr. Thomas chooses to call 'the obscenities of Sivaism and the licentiousness of Tantra and Krishnaism' belong more to the history of Indian religions than to the development of philosophic thought, I did not feel called upon to treat of them.

While I am thankful to Dr. Thomas for his fairly long review, I must confess to a sense of disappointment. It is so much taken up with minor historical details and formal inconsistencies that it does not deal justly with the central interest of the book, *viz.*, the philosophical significance of the chief schools of Indian thought. After all, the readers of MIND are interested mainly in philosophy.

Yours faithfully,
S. RADHAKRISHNAN.

Calcutta,
27th October, 1927.

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